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The Development of Idiom Comprehension in Normally
Developing and Language-Deficient Children

by

Glenn Albert Johnson

B.A., Temple University, 1976

Presented in Partial Fulfillment of the Requirements

for the Degree of

Master of Arts

UNIVERSITY OF MONTANA

1985

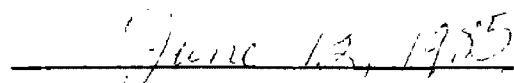
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Johnson, Glenn A., M.A., June, 1985

The Comprehension of Idioms in Normally Developing and
Language-Deficient Children

Director: Barbara Bain *JB*

Recent research has focused on the development of idiom comprehension skills in children. A review of the literature indicates that questions remain with regard to how children comprehend the figurative meanings of idioms, and whether language-learning deficient (l.l.d.) children demonstrate unique problems in the comprehension of idioms and other figurative forms. The present study addresses these questions by examining the developmental course of idiom comprehension in normally developing and l.l.d. children.

A multiple-choice picture-pointing task was used to examine children's comprehension of idioms. Short stories (developed by Ackerman, 1982) which presented systematically manipulated contextual information were used as stimuli in order to examine for the possible effects of context on comprehension. Normally developing children (10 at each age level) were tested at 5, 7, 9, 11, and 14 years of age. L.l.d. children (10 at each age level), matched to the normally developing children on the basis of age and nonverbal I.Q. scores, were tested at 7, 9, 11, and 14 (N = 5) years of age.

The results showed normally developing children comprehend some idioms by five years of age, and comprehension was essentially complete by eleven years of age. While the l.l.d. children were delayed in their understanding of the figurative meanings, the amount of lag was consonant with their overall language delays. These results were interpreted as indicating that the figurative meanings of idioms are processed in the same manner as the meanings of literal forms. There was no support for the notion that the figurative meanings of idioms create unique comprehension difficulties for l.l.d. children.

Some limitations on the present study were discussed, in particular the select nature of the l.l.d. group tested, and the difficulties in generalizing these results to other language-deficient populations. Implications for further research. Further studies are required in order to determine within what age range children first begin to comprehend idioms, and how the early learning of figurative meanings is mediated within the child's environment. Additionally, studies of the development of idiom comprehension in other language-deficient populations are called for.

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Chapter One

Introduction

Interest in studying the developmental course of idiom comprehension has increased dramatically over the last ten years. Until recently regarded as inconvenient stumbling blocks to theories of generative grammar (Weinreich, 1969), idioms are now being investigated as one important component of our overall understanding of the domain of figurative language. The current surge of research into figurative language is due to more than simple heuristic interest in this area of language. Observations showing that:

- 1) figurative forms occur frequently in everyday conversation (Hoffman & Honeck, 1980; Ortony, 1980), and 2) even quite young children appear to routinely use 'metaphor-like' utterances in their speech (Gardner, Kircher, Winner, & Perkins, 1975; Winner, 1979) have been profoundly unsettling to current theories of language comprehension (Hoffman & Honeck, 1980; Ortony, Schallert, Reynolds, & Antos, 1978).

These findings challenge the widely held beliefs that literal meanings have both logical (Glucksberg, Gildea, & Bookin, 1982) and developmental priority (Pollio & Pickens, 1980) over figurative forms. Indeed, as Hoffman & Honeck (1980) have pointed out, most present theories of language are grounded exclusively in the study of literal meanings, and such theories have difficulty accounting for figurative meanings. This is because, as these authors noted, current theories of language "are built on the canon of

compositionality" that is, sentences are treated as inputs into a logical calculus, with meaning derived as a rule-based concatenation of the meanings of the component words" (p. 8). Yet figures of speech, including idioms, appear to defy compositional analysis. Using Honeck & Hoffman's example to illustrate, the meaning of the idiom "He let the cat out of the bag" cannot be paraphrased as "He started some trouble" if one uses the literal meanings of the individual words of the idiom. Something other than a literal analysis of the components of the idiom seems to be required, if the idiom's figurative meaning is to be understood. Thus, the study of idioms, as a component of the overall examination of figurative language, may lead to substantial revisions in linguistic and psycholinguistic notions about language, if nonliteral forms prove to be as pervasive, early developing, and productive as much present research is indicating.

The study of figurative language has also begun to attract the interest of a number of authors in the field of speech-language pathology. This is because language-disabled children appear to show significant difficulties in the understanding and use of figurative language (Blue, 1981; Wiig & Semel, 1984). These problems that language-disabled children have with idioms do not appear to be resolved even into adolescence (Donahue & Bryan, 1984). Assessment techniques (Kellerman, Flood, & Yoder, 1973; Lund & Duchan, 1983) and means for remediating (Auslin, 1978; Ertmer, 1983, Wiig & Semel, 1984) presumed deficits in the comprehension and use of various figurative forms, including idioms, have been proposed. However, an ad hoc examination of these assessment and remediation

devices indicates that these clinical programs are not based on strong empirical evidence regarding the development of comprehension and use of figurative language in both normal and language-deficient populations. While there is considerable intuitive and ad hoc clinical appeal to the notion that speech-language pathologists should 'do something' about presumed deficits in figurative language, further developmental studies are required before clinicians can reliably evaluate and treat deficits in this area.

A number of recent studies have examined the development of metaphoric comprehension in children (Ackerman, 1982; Gardner, et al, 1975; Nippold, 1982; Winner, 1979). However, children's comprehension of idioms has been little studied (Ackerman, 1982; Lodge & Leach, 1975), and only one study of the comprehension of idioms in language deficient children has been reported (Strand, 1982). Given the large number of idioms present in English (Boatner, Gates, & Makkai, 1975), their high frequency of occurrence (Bobrow & Bell, 1973; Honeck & Hoffman, 1980), the problems idioms may pose for language-disabled children (Donahue & Bryan, 1984; Wiig & Semel, 1984), and the interesting challenges they may pose to current theories of language (Honeck & Hoffman, 1980), further studies of the development of comprehension processes in normal and language-deficient populations are indicated. The intent of the present study is to examine the development of idiom comprehension in both language-normal and language-deficient populations.

There is only partial agreement in the literature on what common features are shared across figures of speech, and less agree-

ment on how figurative forms differ. In order to establish a frame of reference within which the review of the literature might be reasonably fit, an outline of relevant terminology is presented below.

Definitions

As indicated previously, a salient feature of figurative utterances is the discontinuity between the literal meanings of the lexical elements comprising a given figure, and the figure's intended meaning. Yet, even given seemingly shared features, "no general, commonly accepted criteria exist by which figurative language phenomena can be distinguished from one another or from non-figurative phenomena" (Honeck, 1980). Thus, with an acknowledgement of their fundamental incompleteness, the following points are outlined.

Figurative utterances are generally conceptualized as extending 'along a gradient of originality' (Estill & Kemper, 1981), with novel metaphors seen as most original or generative, and idioms as having the most strongly conventional, or frozen, meanings.

Metaphors can be defined (following from Richards, 1936, and Perrine, 1971) as a figure of speech in which the thing commented on, the topic (called 'tenor' by Richards), is compared to another, the 'vehicle' (Richards, 1936) on the basis of one or more common semantic features, the ground. This definition embodies, as Pollio & Pickens (1980) have noted, a 'formalist' view of metaphor in which the metaphor purposefully deviates from literal meanings, with

"a deep understanding and knowledge of all of the characteristics of the literal meaning as well as all of the ramifications of metaphoric usage" (Pollio & Pickens, 1980). They contrasted this position to a 'functional' view, in which metaphor serves a variety of possible ends (as additional vocabulary, as 'verbal shorthand', as stylistic ornament) for the speaker. In this view the speaker engineers a creative violation of 'literalness' but is not necessarily aware of all the linguistic and conceptual ramifications of such a violation. Both positions illustrate the potential for novelty and generativity in metaphoric expression; yet each position would obviously lead to different predictions about when 'true' metaphors can appear in speech.

Idiomatic expressions stand in sharp contrast with the creative potential associated with novel metaphors. Like metaphors, the intended meanings of idioms are not derived literally from the individual words comprising an idiom (Swinney & Cutler, 1979). Unlike metaphors, idioms have strongly conventionalized meanings, rigidly related to each specific idiom (Ackerman, 1982). Idioms are typically not frozen or cliched metaphors, but rather expressions which "are often based on often highly specialized local customs or habits" (Ortony, et al, 1978). This would suggest, as Ortony, et al (1978) noted, that idioms must be learned individually, while many metaphors can be 'figured out' through a resolution of the semantic tension posed by the metaphor.

Review of the Literature

The review of the literature will be divided into three topic areas in order to critically examine the research on idiom comprehension in adults, normally developing and language-disabled children. The major theories regarding the processing of idioms by normal adults are reviewed in the section 'Theories of Normal Comprehension Processes'. The section 'Developmental Studies' examines the developmental course of idiom acquisition in normally-developing children. Finally, the limited body of literature focusing on the comprehension and use of idioms by language-disordered populations is reviewed in the section 'Language-Deficient Populations and the Comprehension of Idioms'.

Theories of Normal Comprehension Processes

Some idioms, such as 'it's raining cats and dogs' can plausibly have only one, a nonliteral, meaning. Many other idioms, such as 'He kicked the bucket' can have both literal and nonliteral interpretations, depending on the context in which the phrase occurs. Any theory which attempts to explain how idioms are understood must account for both 'purely' nonliteral idioms and potentially ambiguous forms. Currently two major theoretical positions exist regarding idiom comprehension: multiple-processing theories, and lexical entry theories (Ackerman, 1982). The multiple-processing position will be summarized first, followed by a selected review of the more extensive literature on lexical-entry theories.

The Multiple-Processing Hypothesis

The multiple-processing position is derived from the work of H.H. Clark and his associates. Clark & Lucy (1975) hypothesized that

utterances are interpreted in the following manner: 1) a listener first constructs a literal interpretation for an utterance; 2) the plausibility of this interpretation is compared to the surrounding context; and 3) if a conflict exists, a second, nonliteral meaning is constructed to fit the context. To test this, Clark and Lucy measured the response times (RTs) of 23 college students in an experiment which required subjects to make yes/no judgements about whether the 'conveyed' meaning (non-literal meaning) of 20 direct and indirect requests had been fulfilled. Subjects were shown visual displays containing a sentence (ex: 'Can you color the circle blue?') and a circle colored either pink or blue, and had to judge whether the colored circle represented a fulfillment ('yes') or not ('no') of the 'conveyed' meaning. Results showed indirect requests produced longer RTs than direct/literal requests. Clark & Lucy stated the results supported their model. They reasoned the longer RTs resulted from a need to process the request at several levels in order to derive the non-literal, underlying meaning. Direct request RTs were, on the other hand, faster because no 'reprocessing' was needed, given their model.

In later work Clark (1979) admitted the comprehension model proposed in the 1975 study was incomplete and overly simplistic. For example, listeners may use many sources of information in judging how an utterance is to be interpreted, not just relying on a narrow reading of a given sentence's plausibility within an immediate context. Clark attempted to revise his model to account for multiple information sources (this included a speaker's perceived intentions,

and various linguistic conventions used to signal indirect requests). It is, however, relevant to note for our interest in idiom comprehension that Clark still maintained that both the literal and nonliteral meanings must be computed separately, and apparently on all possible occasions. Thus, with the possible exception of idioms with no plausible literal interpretation (in effect creating two classes of idioms), Clark suggested the intended meaning of idioms is derived via multiple-processing. Such a requirement obviously places significant processing demands on the successful interpretation of idioms with plausible literal interpretations.

The Lexical Representation Hypothesis

At variance to the multiple-processing position is a larger body of evidence indicating that, at least in adults, the comprehension of idioms (and other figurative forms) is not substantively different from the comprehension of literal forms. Indeed, Rumelhart (1979) argues:

...the distinction between literal and metaphorical language is rarely, if ever, reflected in a qualitative change in the psychological processes involved in the processing of that language....the classification of an utterance as to whether it involves literal or metaphorical meaning...is a judgement that can be reliably made, but not one which signals fundamentally different comprehension processes....both theoretical considerations of the language acquisition process and empirical observations of the language of children suggest that far from being a special aspect of language, which perhaps develops only after children have full control of literal language, figurative language appears in children's speech from the very beginning... (Rumelhart, 1979)

Two experiments by Swinney and Cutler (1979) examined the nature of access, storage, and comprehension of idioms in adult listeners. In the first experiment, 20 undergraduates were required to judge if strings of words were/were not grammatical. Swinney and Cutler reasoned

that, since the task required each word string be analyzed for 'sensibleness' as a unit, subjects would show longer reaction times-to-judgment (or at least equal RTs) for grammatical idioms than for nonidiomatic grammatical controls if idioms had to be interpreted through recourse to a special 'idiom processing' mode. If, on the other hand, idioms are stored as whole units - as single lexical entries (they referred to this as the 'Lexical Representation Hypothesis'), RTs for idioms should be faster than RTs for literal word string controls. This would be so, the authors hypothesized, because the computation of both literal and idiomatic meaning would be done simultaneously when the idiom string-as-one-lexical-entry was encountered. This should be accomplished more rapidly than the analyses of the various relationships among the lexical items in nonidiomatic strings. In this experiment, a total of 152 word strings were presented: 23 idioms; 23 grammatically matched nonidiom strings (ex: 'break the ice/break the cup'); 30 other grammatical strings; and 76 nongrammatical strings (order of presentation was randomized for each subject).

Results supported the Lexical Representation Hypothesis, with RTs significantly faster ($p < .0001$) for the idiom than for the non-idiom strings. Further analysis across subjects indicated the results were not due to any 'idiomatic bias' effects, where the early presentation of idioms might have created a perceptual set.

In a second experiment Swinney & Cutler (1979) probed to determine if the degree of 'frozenness' of different idioms had any impact on ease of access to the stored meaning, again as measured by RTs.

Twelve idioms, 3 from each of 4 levels of 'frozenness', and the RT advantage for idioms was again noted. Thus, the authors concluded the Lexical Representation Hypothesis was strongly supported by the experimental data. Whether meaning is comprehended in similar fashion by children who are in the process of developing competence in comprehending idioms is, of course, not addressed within the context of these studies.

Estill & Kemper (1981) reviewed the different hypotheses regarding the processing of idioms. The multiple-processing position of Clark and his associates (1975, 1979) was found to be poorly supported by the evidence in the literature. The position advocated by Gibbs (1980), where the figurative meaning was processed first, and the literal meaning might not be processed at all, was described as 'puzzling'. The third view, the 'lexical-representation' position of Swinney & Cutler (1979), was viewed as better supported by the evidence in the literature.

Estill & Kemper (1980) attempted to clarify the major issues among these competing positions. They designed an experiment which compared the processing of word (subjects listened for a specified word), phonological (subjects monitored for a word that rhymed with a specified cue word), and semantic (subjects listened for a word that was a cohort of a specified semantic category) information within literal and figurative idioms. Four sentence contexts were developed - literal (ex: 'Orville was interested in spiders and could sit for hours and watch them climbing the walls of the garden'); ambiguous (ex:

'Orville hated prison and was climbing the walls to get out'); figurative (ex: 'By the fourth day in the hospital, Orville was climbing the walls to go home'); and non-idiomatic control (ex: 'Orville began the renovation of his old house by knocking out the walls'). Subjects (66 undergraduates) were instructed about the type of monitoring (word, phonological, semantic) required of a given trial, and a cue word was provided. Subjects were then required to monitor a tape recorded sentence, pressing a button when the word corresponding to the cue was encountered. RTs were measured as the time between the occurrence of the target word on the tape and the button-push.

Results showed RTs in all three potentially idiomatic contexts (literal, ambiguous, figurative) were significantly ($p < .05$) faster when compared to the non-idiomatic controls. RT differences between literal and ambiguous idiom contexts were also nonsignificant. These results were interpreted as providing support for Swinney & Cutler's (1979) position that idioms are automatically processed as discrete lexical entries. Estill & Kemper reasoned the 'increased syntactic and semantic constraints of the idiomatic expressions' facilitated faster RTs since these constraints let the subjects anticipate what a 'target' would likely be. This would not be true for the controls since, as non-idioms, the potential 'targets' were essentially infinite.

Estill & Kemper contended the results supported Swinney & Cutler's (1979) hypothesis that literal and figurative meanings were comprehended

simultaneously, since there were no RT differences between literal and figurative contexts. While Estill & Kemper's results are not conclusive support for the lexical-entry hypothesis, the results do suggest idiomatic form does provide some type of 'privilege' of access, at least as measured by RTs, when contrasted with nonidiom forms.

Based on this review of the literature, Swinney & Cutler's (1979) 'lexical-entry' hypothesis is better supported by the available evidence than the multiple-processing hypothesis of Clark and his associates (1975, 1979). Clark's initial work (1975) did not adequately acknowledge the multiple sources of contextual information that listeners use as part of normal comprehension processes. While later (1979) work attempted to account for at least some additional sources of contextual information, Clark's insistence that a literal interpretation of a message must always be interpreted first appears as a Procrustean effort to fit human behaviors to his theoretical position.

The evidence in support of the lexical-entry hypothesis is, while substantive, not without flaws. In Swinney & Cutler's (1979) study, the potency of contextual influences on comprehension is clearly not adequately addressed, with the idiomatic phrase as the limits of a 'context' in the experimental conditions. While Estill & Kemper's (1981) study did examine somewhat broader contextual influences, the sentence monitoring task was an indirect measure of comprehension. Further work is required, work which systematically evaluates the influence of broader contexts and more directly measures idiom comprehension processes.

Developmental Studies

The developmental literature is relatively limited with regard to the comprehension of idioms by children. A study by Lodge & Leach (1975) examined at what ages children showed comprehension of idiomatic meanings for a set of idioms having both plausible literal and idiomatic meanings. Twenty subjects were studied at each of four age levels - 6, 9, and 12 years, and adult. All subjects were read 10 sentences, each containing an idiom that could have both a literal and an idiomatic meaning. As each sentence was read, the subject was shown four pictures related to the stimulus sentence (one picture represented a literal interpretation, one an idiomatic interpretation; one a literal variation foil, and one an idiomatic variation foil). The subjects were required to choose the two pictures that 'best' went with the sentence just heard.

Results showed comprehension of the literal meanings of the idioms was essentially complete by six years of age. The six year-olds chose the literal-variant foil about as often as the literal picture, suggesting this age group was strongly biased toward literal interpretations. Strong growth in preference for idiomatic choices did not begin until age 12, and even at the adult level the idiom was not always selected (the literal-variant foil still accounted for 20% of the second choices). In interpreting these results the authors noted the design could be criticized on the basis of lack of adequate contextual support for the idiomatic interpretation, leading to artificially low response rates for the idioms. This point was well taken, but unfortunately the authors did not follow through on their own critique. Instead, they suggested the late acquisition of idiom comprehension related to a need to acquire some (undefined)

skill in comprehending 'semantic dualities'. This skill required Piagetian decentration as an apparent prerequisite. The lack of this skill led the 6 and 9 year-olds to interpret everything literally. This is a vague explanation and does not begin to explain why idiom comprehension was not complete in the adult subjects.

Strand and Fraser (1979) examined idiom comprehension in 5, 7, 9, and 11 year old students. Twenty idioms with both plausible literal and idiomatic interpretations were used as targets. For each idiom, two sets of four pictures were developed: one set showed a literal interpretation with three variations; a second set showed the idiomatic interpretations with three variations (variant one: constant environment, different action; variant two: same action, different environment; variant three: different environment and different action). Subjects were instructed to point to the picture which best depicted the sentence and to explain what the sentence meant. Correct/incorrect responses were determined based on the subjects' explanations. To avoid confusion, the nonliteral pictures were always administered first.

Results showed stronger, earlier acquisition for idioms than Lodge & Leach (1975) reported. Strand & Fraser found the 5 & 7 year old students consistently understood several idioms correctly (e.g.: 'He got ripped off', 'He cracked up', 'He's feeling blue', and 'He was caught red-handed'). Seven to nine years was the range showing the strongest improvement in idiom comprehension, with comprehension essentially complete by 11 years. This was significantly earlier than the ages reported by Lodge & Leach (1975). Strand & Fraser suggested Lodge &

Leach's presentation of both the literal and nonliteral pictures together might have confused the children. In addition, the authors noted several idioms proved difficult across all age ranges in this experiment, in particular 'He kicked the bucket' and 'He broke the ice'. Nippold (1982) pointed out none of the 'easy' idioms appeared in the Lodge and Leach (1975) list, while several of the harder ones did, which may partly explain the difference in results.

Ackerman (1982), in reviewing the literature on idiom comprehension, noted the multiple-processing position would predict children should acquire idioms relatively late. This was because: 1) an idiomatic interpretation required a context which supported the need for the alternate, nonliteral interpretation; 2) children probably have less knowledge than adults of the conventional interpretation, which; 3) would require even further use of context in order to make a nonliteral interpretation. Since the literature does not support apportioning such complex processing skills to very young children, competence in comprehending idioms should be relatively late developing. In contrast, the lexical-entry hypothesis of Swinny & Cutler (1979) postulated idioms are processed in the same fashion as the literal use of a phrase. If this is so, then:

...children may understand selected idioms before they understand other nonliteral uses of language. Instead of having to compute the context dependent occasion-specific meaning of an idiomatic phrase on each occasion of use, as they would for a sarcastic utterance, for instance, children may learn to interpret idiom phrases in a relatively set manner, just as they would the literal meanings of other noun and verb phrases. (Ackerman, 1982)

Given the above theoretical considerations, Ackerman (1982)

designed a set of experiments to assess the comprehension of idioms by children at four age levels: grade one (G1), grade three (G3), grade five (G5), and adult. There were 24 subjects at each age level. Subjects were read short stories, with a terminal sentence containing an idiomatic phrase. The story contents were systematically manipulated to assess the effect of context on interpretation. Three contexts were developed for each idiom: idiomatic (ex: 'Sam and Jack lived in the mountains and had been enemies for a long time. One day they decided to bury the hatchet'), neutral (ex: 'Sam and Jack had been living in the mountains with their families for a long time. One day they decided to bury the hatchet'), and literal (ex: 'Sam and Jack lived in the mountains and had been cutting wood for their parents for a long time. One day they decided to bury the hatchet'). To assess the influence of idiomatic form, each terminal sentence was varied by using either the idiom form per se ('bury the hatchet') or a changed form ('hide the hatchet') that could be used to develop the same idiomatic meaning, but without using the conventional form of the idiom. After each story sequence was read, each subject was asked two questions. First, they were asked to explain what happened in the terminal sentence. Then, they were asked a yes-no question about an actor's action as described in the target sentence, in order 'to assess children's recognition that a literal interpretation of the sentence was inappropriate' (Ackerman, 1982), since children may be aware of the nonliteral use of an utterance, without necessarily being able to explain what occurred. To select the twenty idioms used, four adult judges rated 120 idioms (all in a N-V form) on frequency of use in English; the

stimuli used were all rated as frequently occurring forms. Two stories (one 'literal', and one 'idiomatic') were used for training the task. In training, corrective feedback was given for the first example, but not for the second. No feedback was given during the experimental trials.

The subject's explanations were categorized by three independent judges into four categories: 1) idiomatic- describing the conventional idiomatic use of the idiom; 2) literal - giving a declarative, informative use of the sentence, to convey its propositional content; 3) inferential/other - a nonliteral interpretation of the use of the idiom, not in agreement with the conventionalized idiomatic interpretation, but was a possible interpretation; 4) all other. Inter-rater reliability was 100%.

Results for the explanation question showed significant effects ($p < .001$) in all cases below) for grade (G) (with the idiomatic explanations increasing as grade level increased), form (with idiom explanations occurring more frequently for the idiom than the changed form), and context type (with idiomatic explanations increasing from the changed form), and context type (with idiomatic explanations increasing from the literal to neutral to idiomatic contexts). Analysis of grade x sentence form interaction showed the adults were significantly more likely to interpret the changed form as an idiom than were any of the children. A 3-way analysis of variance (context x grade x form) showed the same patterns of explanations as noted in the main effects above, with the exception that the GIs gave idiom explanations only for idiom forms except when the idiom form x idiom context occurred. No item effects for individual idioms were found.

Results from the 'action question' were similar to the above, with one exception: the G5s, as well as G1s & G3s, demonstrated an interaction of sentence form x context. The interaction was different for the G5s in contrast to G1s & G3s: in the idiom context idiomatic responses occurred with equal frequency for the idiom and changed forms; in the other two contexts the idiom interpretation occurred more for the idiom than for the changed form. For the G1s & G3s, the only increase in choosing the idiom interpretation occurred in the idiom form x idiom context condition.

Ackerman's (1982) results indicated children do not fully understand idioms until between G3 & G5. However, when task demands were reduced (yes/no response vs explanatory response) the youngest students showed strong sensitivity to nonliteral interpretation in some contexts. Thus, while results suggested younger children must depend on contextual support to a greater extent than G5s & adults in order to 'see' the idiom, even the youngest were sensitive to nonliteral meaning in the appropriate context. On the other hand, the G5s and adults tended to perceive idioms even in nonidiomatic contexts. This, for Ackerman, suggested 'idiom interpretations are relatively fixed and not strongly dependent on contextual support' for competent listeners. Also, since idioms were perceived more frequently by subjects at all grade levels when in their conventional than changed forms, Ackerman suggested 'the forms of idioms per se contribute in some special way to idiomatic interpretations'.

Finally, Ackerman suggested that while results supported the lexical-entry hypothesis of Swinney & Cutler (1979) over the multiple-processes hypothesis of Clark and his associates (1975, 1979), neither position

was sufficient to fully explain the developmental results. For example, if idioms are rigidly 'fixed' entries, then the strong tendency for G1s & G3s to give idiom interpretations in the idiom context, but not in the neutral context should not have occurred. The multiple-processing model is insufficient for two reasons: first, the form of the idiom influences the likelihood of an idiomatic interpretation being made - thus, it is 'privileged' in some fashion. Second, the G1s (and some G3s) did not give idiom interpretations to the changed forms in the idiom contexts, and 'this should have occurred if computation of literal meaning and contextual incongruence were the bases of idiom comprehension' (Ackerman, 1982). Given this explanatory insufficiency, Ackerman calls for the development of a third view, one that more fully accounts for the developmental evidence.

The studies reviewed above indicate several developmental issues regarding idiom comprehension remain unresolved. Lodge & Leach's (1975) results are so strongly at variance with the results of the other studies reported on, and with an ad hoc test of reasonableness (i.e. one would not expect 20% of normal adults to fail a picture comprehension probable of common idioms) as to indicate the study had serious methodological problems. Yet, Ackerman's (1982) results also may not fully reflect the developmental competence of younger children. Ackerman required his subjects to explain the meaning of the target idioms, a metalinguistically sophisticated task. As the results of his 'action question' (which required a yes/no response) indicated, comprehension of some idioms in some contexts may indeed be well under way by grade one. Strand & Fraser's (1979) results lend support to this view of

early competence, but these authors also based the obtained idiom comprehension scores on the subject's explanations (although the pictorial information supplied may have made the task somewhat easier). Unfortunately, Strand & Fraser did not use story contexts in their study, so the influences, if any, different contexts exert on ease of comprehension for the younger children are unknown. Using the reduced task demands inherent in a picture-pointing task, (within the framework of systematically varied contextual conditions) suggests itself as a means for further elaborating on when and under what conditions idiom comprehension begins in normally developing children.

Language Deficient Populations and the Comprehension of Idioms

The literature on the development of idiom comprehension skills in language deficient populations is sparse. Strand (1982), in an exploratory study, examined idiom comprehension in 18 language-disordered children at 7, 9, 11, and 13 years of age (4 or 5 students at each age level). All students scored above 90 on the Performance Subscale, and below 90 on the Verbal Subscale of the Wechsler Intelligence Scale for Children (WISC; 1949), with at least a 15 point discrepancy between scores. Stimuli, experimental design and response scoring were the same as reported in Strand & Fraser (1979). The results from the normally developing children in Strand & Fraser (1979) were used as controls.

Results showed all children comprehended all the literal interpretations for the target idioms. The seven year-olds were consistently able to give explanations for some idiomatic meanings, yet, they 'clearly preferred to use a literal method for interpreting idiom meanings'. The nine year-olds represented a 'transition group', with some students

preferring literal explanations, some idiomatic explanations. Both the 11 & 13 year-olds used 'predominantly' idiomatic explanations. Strand indicated an examination of the linguistic structures of the idioms used showed no inherent differences to explain why some idioms were acquired consistently earlier than others, a pattern also seen in Strand & Fraser (1979). The author concluded the data supported the lexical-entry hypothesis. Further, the language-disordered children did not appear to be 'stuck' in a literal mode for interpreting idioms, as other authors (Wiig & Semel, 1980 were cited) have indicated. Rather, while their development was delayed, the overall pattern 'shadows' that of normal children.

These results challenge the prevalent view in the language-disorders literature (see: Wiig & Semel, 1984; Blue, 1981; Donahue & Bryan, 1984, reviewed below) regarding figurative competence and language deficient populations. However, Strand's results relate only to one small, sample of language deficient children. Given the heterogeneity which characterizes language deficient populations, greater descriptive detailing of the subject population would have helped better establish the generalizability of the results. It is entirely plausible, given the seemingly open-ended subgroupings possible within language-disordered populations, that Strand's results were artifacts of sample size and selection procedures.

Wiig & Semel (1984) reported their clinical observations indicated 'language and learning disabled (l.l.d.) youth have problems recognizing and interpreting figurative language'. They indicated this is because l.l.d. individuals tend to interpret figures of speech literally and concretely, 'without perceiving the abstract intentions of idioms,

metaphors, or proverbs'. Wiig & Semel suggested since figures such as idioms are encountered frequently in English, and their misinterpretations are sources of confusion and potential humiliation, idioms should be a target for remediation. These authors suggested the abstract meanings of idioms may need to be taught to l.l.d. children one-by-one, since limited transfer can be expected across idioms. Unfortunately, Wiig & Semel did not provide specific data regarding normal and/or delayed patterns of idiom acquisition, nor did they present case studies to illustrate their 'clinical observations'. Thus, while suggesting deficits in idiom comprehension should be remediated, these authors leave a reader wondering how to identify delays in idiom comprehension and usage, and when to begin remediation.

Blue (1981) indicated that when talking with language-delayed children a speaker would be wise to avoid the use of idioms, as well as sarcasm, ambiguities, indirect requests, and multiple-meaning words. This author cited otherwise undocumented and unsupported 'clinical experience' as the basis for suggesting these language forms be avoided. No suggestion was made to indicate if any of these nonliteral forms should ever be introduced in a remedial program, nor is any information provided regarding normal patterns of idiom comprehension.

Lund & Duchan (1983), in developing means for assessing language in 'naturalistic contexts' indicated the importance of probing the development of nonliteral meanings in the language of older (school-age) language-disordered children. These authors presented a brief review of the developmental literature for metaphors, double-function words, jokes, and

riddles. However, again reflecting the lack of relevant literature, very little guidance or suggestions were provided regarding how and when to probe for comprehension of idioms, or how to use any data developed for treatment planning.

Donahue & Bryan (1984), in summarizing major trends in the literature available on the language needs of learning disabled adolescents, suggested these adolescents might show deficits in learning idioms. They reasoned as follows: given the increasing evidence showing l.l.d. children do not simply 'grow out' of difficulties in acquiring vocabulary, syntax and semantic structures, these deficits may hinder '..the learning of new slang and idiomatic expressions..'. In addition, these authors cited evidence (see, for example: Bryan, 1974; 1976) showing l.l.d. children were less likely, during the elementary years, to be selected as friends by their classmates than are average-achieving students. One could speculate this relative isolation from significant peers, in which many language forms are learned and practiced, may deprive the l.l.d. child of a major 'training-ground' for the learning and practice of idiomatic meanings. L.l.d. children might also be at a loss for adding idiomatic meanings into their fund of word/phrase knowledge since, based on the work of Donahue, Pearl, & Bryan (1980), they are less likely than normal children to request clarifications of ambiguous messages. However, while the literature is indeed suggestive in these regards, without further in-depth study of developmental trends in normal and disordered populations, this reasoning is simply speculative.

Statement of the Problem

The review of the literature has indicated several important un-

resolved issues regarding idiom comprehension by children. One issue relates to the processing mechanisms by which the nonliteral meaning of an idiom is derived. The multiple-processing theory of Clark and his associates (1975; 1979) posits a 'plausibility test' for comprehension. Listeners cue as first priority the literal meanings of words and sentences within discourse. Thus, the nonliteral meaning of an idiom would not necessarily be retrieved unless the initial, literal interpretation was implausible with regard to the surrounding context. Only when the literal meaning doesn't fit is the nonliteral meaning of the idiom derived. As Ackerman (1982) has suggested, if this view of idiom comprehension is correct, the development of comprehension competence should occur relatively late, given the complicated, multi-stage processing required.

In contrast, the lexical-entry theory of Swinney & Cutler (1979) suggests idioms are learned as 'single-unit' entries into a lexicon. Here, idioms are learned like other words, and their meanings are processed and retrieved in routine fashion. Thus, idiom comprehension may begin relatively earlier than Clark's (1975, 1979) theory would predict, since no special form of processing is needed. One study by Lodge & Leach (1975) indicated idiom comprehension developed relatively late. As noted above, this study was confounded by serious methodological problems. Ackerman (1982) also studied developmental trends in idiom acquisition, and how interpretation might be influenced as a function of context. Ackerman's results indicated comprehension begins and is completed substantially earlier than Lodge & Leach's (1975) findings suggested. Further, different contextual conditions appeared to selectively facilitate

ease of figurative comprehension in the younger age ranges. However, Ackerman's results may not fully reflect early comprehension competence, as the comprehension measure used was relatively complex, requiring verbal explanation of the idiom meanings. A second study (Strand & Fraser, 1979), which provided pictorial contextual support but again required children to explain their answers as the measure of comprehension, showed children as young as five years demonstrated comprehension of some idioms. Unfortunately, Strand & Fraser (1979) did not co-vary context conditions, which would have permitted direct comparison with Ackerman's results.

Ackerman (1982) argued his results tended to support the lexical-entry hypothesis over the multiple-processing theory. However, the evidence was not in complete agreement with lexical-entry: contextual support influenced whether G1 & G3 children 'saw' the nonliteral meaning of an idiom, which should not happen if idioms are 'fixed' entries. These findings challenge both major theories of idiom comprehension. They require replication and extension within an experimental frame using a simplified comprehension measure combined with systematic variation of context.

Finally, this review of the literature identified the presence of ad hoc commentary in the speech pathology and learning disabilities literature regarding comprehension of idiomatic and other figurative forms by language-deficient children. Some authors suggested the need to assess idiom comprehension (Lund & Duchan, 1983; Wiig & Semel, 1984) and to remediate any deficits in comprehension (Wiig & Semel, 1984). Other authors postulated language-learning disabled children may not

'catch up' to normals in the comprehension of idioms, even into adolescence (Donahue & Bryan, 1984). However, while there is considerable intuitive and practical appeal to these positions, there is as yet little reliable data on language-deficient children's comprehension of idioms. The one empirical study cited (Strand, 1982) was limited by several methodological shortcomings.

Given the above issues - how idioms are comprehended, and what the developmental courses of comprehension are for normal and language-deficient children, the current investigation addresses the following questions:

1. What is the developmental course of idiom comprehension in normally developing children?
2. How does the developmental course of idiom comprehension compare for language-deficient children?
3. Do specific antecedent contexts influence idiom comprehension for young children?
4. Do older language-learning disabled adolescents perform in a manner similar to normally-achieving subjects by fourteen years of age?

Chapter Two

Methodology

Subjects

A total of 86 students participated in the experimental task. The design for this study called for ten normally developing and ten language-deficient school children at each of the following age levels: 5, 7, 9, 11, and 14 years of age. The appropriate number of normally developing students were successfully recruited at all of the above age levels. Only one language-deficient five year-old participated (of 7 referrals, 3 declined and 3 were deemed inappropriate given the selection criteria outlined below). Five language-deficient 14 year-olds participated, of 8 referrals (the other three scored above criterion on measures of language development). The upper cut-off of 14 years (G 8) was selected in order to provide data relevant to the differences noted between Strand's (1982) findings for earlier competence in l.l.d. children than Donahue & Bryan's (1984) and Wiig & Semel's speculations suggested. The lower cut-off was chosen in order to further explore Strand & Fraser's (1979) findings, where normal 5 year-olds were able to understand some idiom forms when pictorial contextual cuing was used.

All subjects attended either publically-funded Roman Catholic Kindergartens and schools in Calgary, Canada, or, in the case of some l.l.d. subjects, a special school for l.d. children (Foothills Academy) in Calgary. Normally developing subjects were selected for initial screening by their classroom teachers. The 7 to 14 year-old language-deficient subjects were referred by resource room teachers in the Catholic Board,

and by classroom teachers at Foothills Academy. The five-year old language-deficient subjects were referred by speech-language clinicians at the Alberta Children's Hospital. All subjects met the following criteria, adapted from Stark & Tallal (1981):

1. chronological age within ± 6 months of each target age;
2. hearing screening indicated sensitivity within normal limits bilaterally @ 25dB, at .5, 1, 2, & 4KHz, with no known history of chronic otitis media, based on parent and teacher report;
3. child did not demonstrate severe behavioral or personality disorder, to clinical observation or teacher interview;
4. oral-peripheral evaluation indicated structural and functional development within normal limits;
5. no confirmed or clinically evident neurological impairment (see: Touwen, 1979);
6. nonverbal I.Q. within normal limits, as measured by the Performance subscale of the WISC-R;

To control for the cultural diversity of the school population in Calgary, a final common criterion was:

7. English is the language spoken in the child's home.

In addition to the above requirements, the language-deficient subjects met the following criteria:

1. language comprehension at least 1 standard deviation (S.D.) below the mean for children of their chronological age, based on standardized measures of receptive language;
2. expressive language development greater than 1 S.D. below the mean on standardized measures of verbal expression.

The normally developing students met the following additional criteria:

1. 7-14 year-olds were demonstrating grade level achievement in reading and math skills (based on teacher report and most recent report card results);
2. the 5 year-olds demonstrated normal readiness skills, based on teacher report;
3. scores within ± 1 S.D. of the mean for their chronological age levels on the language screening tests detailed in 'Screening Measures', below.

Following procedures from Leonard, Nippold, Kail, & Hale (1983),

the language-deficient subjects were matched on the basis of chronological age and performance I.Q. scores to normally developing subjects. Ages were matched within six months, and performance I.Q.s were matched within one standard deviation.

Screening Measures

Following initial referral, all subjects were screened to ensure agreement with the selection criteria outlined above. A subject who failed any screening item was dropped from the study. The only exception was in the case of a subject who failed the hearing screening due to a cold. The subject was rescreened at a later date, and if hearing was then found to be within normal limits, the subject was included for further participation.

Performance I.Q. was evaluated using the Yudin (1966) short form of the Performance subscale of the Wechsler Intelligence Scale for Children - Revised (WISC-R; Wechsler, 1974). Following from Wechsler, this measure was not repeated on subjects to whom WISCs had been administered within the previous 12 months. Any subject who scored more than 1 S.D. below or above the mean (I.Q. range 85-115) was excluded from the study. Performance I.Q. for the five year-olds was evaluated using the Silverstein (1968) short form of the Performance subscale of the Wechsler Preschool and Primary Scale of Intelligence (WPPSI; Wechsler, 1967).

Language development was assessed using comprehension ('Picture Vocabulary' & 'Grammatical Comprehension') and expressive ('Sentence Imitation' & 'Grammatical Completion') tasks from the Test of Language Development Primary (TOLD-P; Newcomer & Hammill, 1982) to evaluate the 5 & 7

year olds; comprehension ('Characteristics' & 'Grammatical Comprehension') and expressive ('Sentence Combining' & 'Word Ordering') tasks from the Test of Language Development-Intermediate (TOLD-I; Hammill & Newcomer, 1982) for the 9 & 11 year olds; and oral comprehension ('Listening/Vocabulary' & 'Listening/Grammar') and oral expression ('Speaking Vocabulary' & 'Speaking/Grammar') tasks from the Test of Adolescent Language (TOAL; Hammill, Brown, Larsen, & Wiederholt, 1980) for the 14 year-olds.

Stimuli

Selected protocols (idioms and story contexts) from Ackerman's (1982) study were used, with his permission, for this experiment. To determine which of Ackerman's 20 idioms were viewed as commonly occurring by Western Canadian speakers, four local adult anglophone judges were asked to rate Ackerman's idioms (mixed with 30 additional idioms selected from Boatner, et al (1975)), for frequency of occurrence. A four point scale (1 = very infrequent; 4 = very frequent) was used for rating. Fifteen of Ackerman's twenty idioms were rated as 'frequently occurring' (mean rating of 3.0 or above), and 14 of these idioms were used as stimuli (mean score of these 14 = 3.43). Twelve were target stimuli, and two were used as training items.

For each idiom three alternative story-contexts were developed by Ackerman (1982) (see Appendix A). Each story described a short behavioral episode that plausibly leads into the target form. These alternate story-contexts are: 1) Idiomatic - the story biases an idiomatic interpretation of the target; 2) Literal - the story biases for a plausible, literal interpretation of the idiom; and 3) Neutral - the idiom can potentially be interpreted either literally or idiomatically.

Each story is balanced for length, and the target idiom is integrated into each story as the final sentence.

For each idiom in both the Literal-bias and Idiomatic-bias conditions a set of four pen and ink drawings were developed and placed on one response plate (see Appendix B). In each condition the set of four pictures illustrated: 1) a scene that accurately visualizes the activity conveyed by the story and target; 2) a foil in which the action is changed but the pictured environment is unchanged; 3) a foil in which the action is the same as in #1, but the environment is changed; and 4) a foil in which both the environment and action are changed. This method of varying foils was derived from Strand & Fraser (1979).

In the Neutral condition the pictorial choices consisted of both response plates from the associated Literal and Idiomatic conditions. This was done to maintain a constant ratio of correct targets to foils across all test conditions.

Three alternative sets of 12 plates were generated for presentation. Each set contained four occurrences of each of the three context conditions. No one idiom was used more than once in a list. To avoid the possibility that a subject would develop a 'response set' to a particular context-condition, the first three items were always an example of each condition. Presentation of the remaining nine items was randomized, with the restriction that no context-condition could occur more than twice in a row. Order of presentation was counterbalanced across subjects.

Procedure

Subjects were tested individually at their schools. The screening

measures were administered in one session, in the order noted above. The idiom comprehension tasks were administered in a follow-up session to those subjects passing all screening items.

Subjects were instructed about the nature of the experimental tasks, and what they were expected to do during the session (see Appendix C for the specific instructions). The procedure was illustrated for each subject through the use of two training trials. The first trial used an idiomatic context, the second a literal context. Corrective feedback was provided as needed only during training. During training and the first two experimental trials subjects were verbally reinforced for appropriate attending behaviors. This reinforcement was repeated after every third subsequent item. When a subject asked for a repetition of a story, this was given and the repetition noted. For any questions pertaining to performance, the subject was reminded that the investigator could give no further information during testing. If a subject indicated uncertainty regarding a response, or took more than 30 seconds to respond, the investigator then encouraged the subject to guess. Each response was recorded by the investigator.

Chapter Three

Results

Introduction

The experimental results will first be reported with reference to Questions One, Two, and Three posed in the 'Statement of the Problem'. Within each Question the results of analysis of variance (ANOVA) tests for main effects will be presented, followed by post hoc statistical analyses when appropriate. The results relevant to Question Four in the 'Statement of the Problem' will be outlined in the next section. Due to the limited sample size of the 14 year-old language-deficient (l.l.d.) group, these results are presented as descriptive findings only. The final section, 'Supplemental Analyses' will present correlational and descriptive analyses which elaborate on relevant issues not otherwise treated by the major statistical tests.

The experimental design was a 5 (Age Level) x 3 (Context Type) x 2 (Language Condition) factorial design. The factor 'Context Type' was treated as a within-subjects measure. The data obtained consisted of the picture choices made by the two categories of subjects (normally developing and language-deficient) at each age level (5, 7, 9, 11 & 14 years) in response to the three story contexts (literal, idiomatic, neutral). A correct response for both the literal and idiomatic contexts was defined as a subject choosing the picture which accurately depicted the environment, actor(s) and action(s) presented orally in the form of short stories. For the purposes of analysis the choice of either the literal or idiomatic picture in the neutral condition was treated as a correct response. The probability of obtaining a correct response by chance was always 25%.

The data were initially analyzed for main effects using a 3 (context) x 5 (age level) ANOVA for the results obtained from the normally developing subjects, and a 3 (context) x 3 (age) ANOVA for the results obtained from the language-deficient subjects. To analyze for the effect of language condition a 3 (context) x 2 (language condition) ANOVA was used. Supplemental ANOVAs were done using the basic factorial designs noted above, but with the neutral context data removed, as the neutral context data were different in some potentially important ways from the idiomatic and literal contexts (subjects had a larger response field to select from - 8 pictures, vs 4 in the other two conditions - and the story contexts may have posed unique challenges). All the ANOVAs were computed using the BMDP-P2V software package (Dixon, 1981). When significant ($p \leq .05$) main effects were found, Scheffe tests (see Kerlinger, 1973) were computed on a post hoc basis in order to determine which mean differences contributed significantly ($p \leq .05$) to the overall variance.

Question One: What is the developmental course of idiom comprehension in normally developing children?

Mean percentage of correct responses for each context at each age were calculated. These results are presented in Table 1. Results of the ANOVA showed main effects for age, $F(4,45) = 21.27$, $p = .0000$, and context, $(F(2,90) = 4.74$, $p = .011$, with correct responses increasing with each increase in age. The one exception to this was in the neutral context, where the five year-olds performed better than the seven year-olds. Post-hoc analysis of results (Table 2) showed significant increases in correct responses in the idiomatic-bias context between 5 and 9 years of age and older, and between 7 - 14 years of age. As shown in Figure 1,

the rate of growth of correct responses tapers substantially beyond eleven years of age. The two-way interactions of age x context were not significant, ($F(8,90) = 1.17$, $p = .323$, indicating these effects did not vary across age levels. The post-hoc analyses of the neutral and literal context results, and of the main effect for context, are contained under Question Three, below.

Table 1. Mean percentage of correct responses for normally developing students.

	Context		
	Idiomatic	Literal	Neutral
Age/Years			
5	47.5	60.0	62.5
7	67.5	75.0	55.0
9	82.5	82.5	60.0
11	87.5	100	87.5
14	90.0	100	87.5
Mean	75.0	83.5	70.5

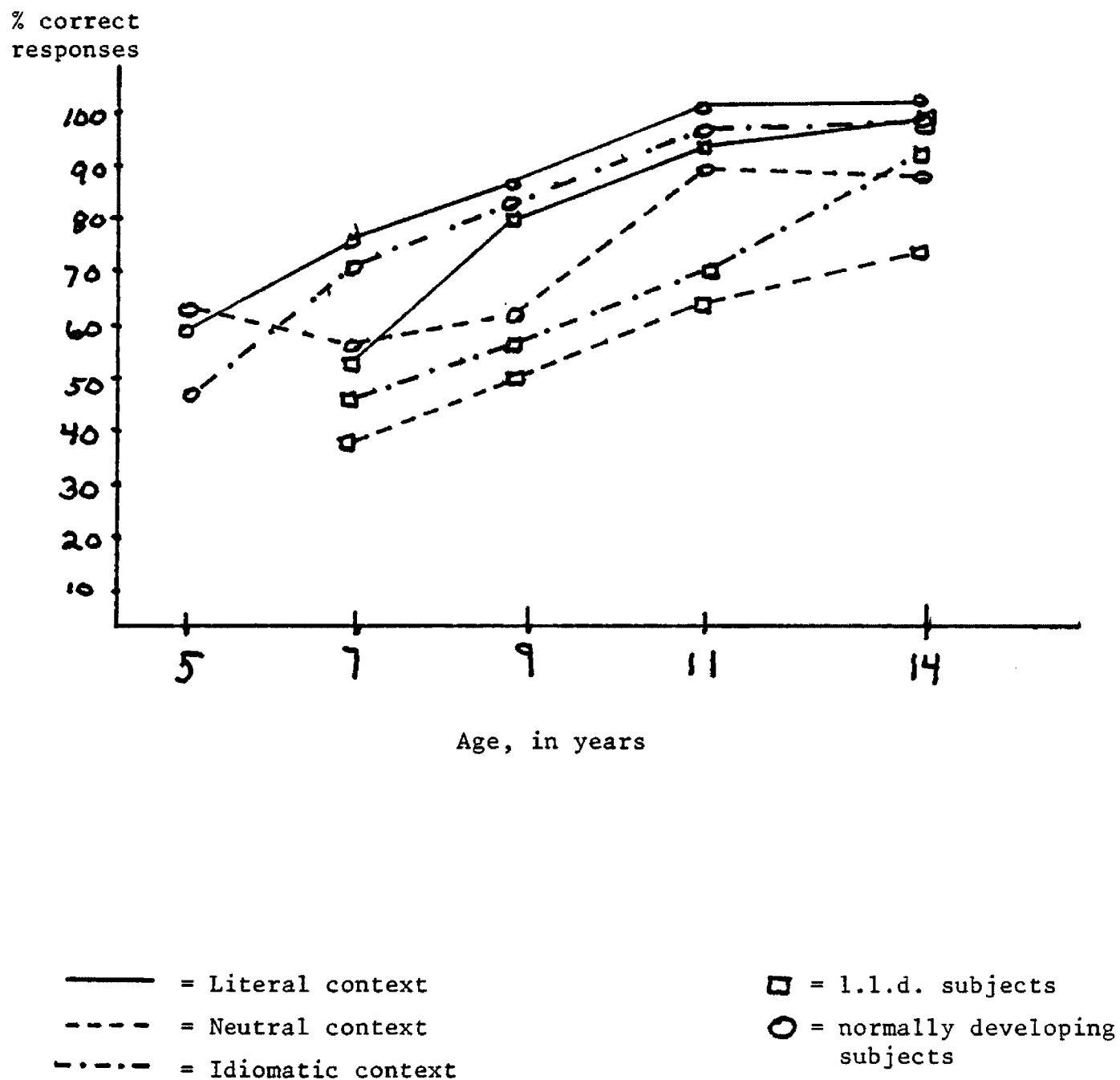
Table 2. Scheffe tests: idiomatic context/normally developing students.

Age/Years	5	7	9	11	14
5	-	.8/(1.22)	1.4/(1.12)*	1.6/(1.15)*	1.7/(1.14)*
7	-	-	.6/(.84)	.8/(.87)	.9/(.87)*
9	-	-	-	.2/(.72)	.3/(.54)
11	-	-	-	-	.1/(.75)
14	-	-	-	-	-

* = significant at $p = .05$

Note: First number reported in each matrix is obtained difference in age means; second number, in parenthesis (), is mean difference required for mean difference to be significant.

Figure 1: Mean percentage of correct responses, by age level, context, and language condition.



Question Two: How does the developmental course of idiom comprehension compare for language-deficient children?

This question will be examined in two parts. First, the data obtained from the l.l.d. subjects will be analysed for main effects and significant trends. Following this analysis the results from the normally developing and l.l.d. subjects will be compared in order to examine for the effect of language condition.

The sample sizes were limited (1 and 5 subjects) at 5 and 14 years for the l.l.d. subjects. Thus, for the purposes of analysis for main effects only the data obtained from the 7, 9, and 11 year-old l.l.d. subjects were used. Mean percentages of correct responses obtained were calculated at 7, 9, 11 and 14 years for each context (the results from the single five year-old subject were not included, due to the small sample size). These are presented in Table 3. A 3 (age) x 3 (context) ANOVA was conducted to examine for main effects. A main effect for age $F(2,27) = 13.57$, $p = .0001$, was found, with correct responses increasing with each increase in age, but no main effect for context, $F(2,54) = 3.04$, $p = 0.56$. The literal context generated the most and the neutral context the fewest correct responses at each age level. Post-hoc analysis (Table 4) showed significant increases in scores for the idiomatic-bias context between 7 - 11 years of age. While the data from the 14 year-olds were not included in the ANOVA, inspection of Figure 1 shows that strong growth in idiom comprehension continued from 11 through 14 years. The two-way interactions of age x context were not significant, $F(4,54) = .19$, $p = .9446$, again showing these effects did not vary significantly across age levels.

Table 3. Mean percentage of correct responses for language-deficient students.

	Context		
	Idiomatic	Literal	Neutral
Age/Years			
7	45.0	52.5	35.0
9	55.0	70.0	52.5
11	72.5	90.0	65.0
14*	85.0	95.0	75.0
Mean	61.4	74.3	54.3

(Weighted)

*N = 5 for 14 year-olds; N = 10 for 7, 9, 11 year olds.

Table 4. Scheffe tests: idiomatic context/language-deficient students.

Age/Years	7	9	11
7	-	.4/(1.31)	1.1/(1.01)*
9	-	-	.7/(1.01)
11	-	-	-

* = significant at $p = .05$

Note: First number reported in each matrix is obtained difference in age means; second number, in parenthesis (), is mean difference required for mean difference to be significant.

To examine for the effects of language condition (normal vs deficient), a 2 (condition) x 3 (context) ANOVA was conducted using the data obtained from the 7, 9, & 11 year old normal and language-deficient subjects. Main effects were found for language condition, $(F(1,58) = 17.04, p = .0001)$, with the normally developing subjects scoring more correct responses than the l.l.d. subjects at each age level, and for context, $F(2,116) = 12.04, p = .0000$, with the most correct responses in the literal context and the fewest correct in the neutral context. The two-way interactions of condition x context were not significant, $F(2,116) = .40, p = .6734$.

Another ANOVA was conducted excluding the data from the neutral context. Main effects were again found for language condition, $(F(1,58) = 16.61, p = .0001)$, with the normally-achieving subjects making more correct responses than the l.l.d. subjects at each age level, and for context, $F(1,58) = 7.02, p = .0104$, with more correct responses in the literal over the idiomatic context. The two-way interactions of condition x age were again not significant, $F(1,58) = .78, p = .3808$.

Question Three: Do Specific Contexts Influence Idiom Comprehension in Young Children?

This question will be divided into two sections. The first presents the results relevant to answering the question with regard to the normally developing subjects, the second with regard to the language-deficient subjects.

Normally Developing Subjects

Averaged across all age groups, subjects made the most correct choices in the literal context (Mean = 83.5%), followed by the idiomatic

context (Mean = 75%), with the neutral context showing least probability of a correct response (Mean = 70.5%). As noted under Question One, the results of the ANOVA showed a significant main effect for context (Table 5).

Table 5. ANOVA summary.

ANOVA	F	df	P
1. Normals: age x all contexts ¹ .			
age:	21.27	4	0.0000
context:	4.74	2	0.0110
interaction:	1.17	8	0.3230
2. Normals: age x two contexts ² .			
age:	30.98	4	0.0000
context:	4.52	1	0.0389
interaction:	0.34	4	0.8519
3. L.l.d.: age x all contexts ¹ .			
age:	13.57	2	0.0001
context:	3.04	2	0.0560
interaction:	0.19	4	0.9446
4. L.l.d.: age x two contexts ² .			
age:	10.13	2	0.0005
context:	2.34	1	0.1379
interaction:	0.21	2	0.8145
5. Language conditions ³ : condition x all contexts ¹			
language condition:	17.04	1	0.0001
context:	12.04	2	0.0000
interaction	0.40	2	0.6734

	F	df	P
6. Language conditions ³ : condition x two contexts ² :			
language condition:	16.61	1	0.0001
context:	7.02	1	0.0104
interaction:	0.78	1	0.3808

¹all contexts = literal, neutral, idiomatic.

²two contexts = literal, idiomatic.

³language conditions = normally developing, language-learning deficient.

Post-hoc analysis indicated the mean differences in results between the literal and neutral-bias contexts were significant. No other mean differences were significant. However, a consistent trend toward earlier acquisition of meaning was demonstrated within the literal-bias context over the idiomatic-bias context at all age levels (Table 1).

Another ANOVA was conducted with the data from the neutral context deleted. Results again showed significant effects for age $F(4,45) = 30.98$, $p = .0000$, with correct responses increasing with each increase in age, and for context, $F(1,45) = 4.52$, $p = .039$, with significantly more correct responses for the literal over the idiomatic context. These results confirm that much of the contextual variance in the first ANOVA was contributed by the neutral context results. Once again, the interaction of age x context was not significant, $F(4,45) = .34$, $p = .8519$.

In the neutral context a correct choice could be either the correct literal or correct idiomatic picture plate. In Table 6 these correct responses are classified into mean percentage of idiomatic and literal responses. As can be seen from Table 6, a consistent preference for the literal variant was shown at all age levels. No clear trend toward the idiomatic choice is obvious from Table 6. While the 14 year-olds demonstrated the greatest (30.5%) preference for the idiomatic choice, this is not a clear indication of preference, and it was the 7 year-olds (27.3%) who showed the next highest preference for choosing the idiom variant.

Language-Deficient Subjects

The 1.1.d. subjects made fewest errors in the literal context

(Mean = 61.4%), with the neutral context again generating the fewest correct choices (Mean = 54.3%). A weighted mean average was used in the computation of these means, in order to include the data obtained from the 14 year-old subjects. As noted in Question Two, only the results from the 7, 9, and 11 year-olds were used in the analysis for main effects. As noted previously, there was no main effect for context, $F(2,54) = 3.04$, $p = .056$, with this group.

Another ANOVA, conducted with the neutral context data deleted, again found significant main effects for age, $F(2,27) = 10.13$, $p = .0005$, with increases in correct responses at each increase in age, but the effect for context remained non-significant, $F(1,27) = 2.34$, $p = .1379$. The two-way interactions between age and context were again not significant, $F(2,27) = .21$, $p = .8145$.

In Table 6 correct responses in the neutral context are classified into percentage of correct idiomatic and literal choices. The results from the l.l.d. subjects are similar to the results of the normally developing subjects, in that the l.l.d. subjects show a consistent preference for the correct literal choice. In contrast to the normally developing subjects however, the l.l.d. subjects shown an even greater overall preference for the literal over the idiomatic choice (83.5% literal across the ages 7, 9, & 11 years for the l.l.d. subjects, vs 79.6% literal across the same ages for the normally developing subjects).

Question Four: Do older language-learning disabled adolescents comprehend idioms as well as normally developing peers?

Due to the unequal sample sizes between the l.l.d. and normally developing subject groups at 14 years of age, formal tests for signifi-

cant differences were not completed on the data for these groups. However, as Table 7 indicates, the l.l.d. adolescents do perform at levels of comprehension similar to those attained by their normally developing peers. Comprehension of the idiomatic forms is, at 85% correct, only marginally less than the 90% correct attained by the normally developing subjects. The l.l.d. adolescents were less successful in the neutral context, with a mean score of 75% correct noticeably poorer performance than the 87.5% correct obtained by their normally developing peers. The l.l.d. adolescents opted strongly for the literal response in the neutral context (86.7% literal) in contrast to the normally developing subjects (69.4% literal).

Table 6. Percentage of idiomatic and literal-variant responses in the neutral-bias context.

Age/Years	Language Condition			
	Normal		Deficient	
	Liter al	Idiomatic	Liter al	Idiomatic
5	81.0%	19.0%	-	-
7	72.7%	27.5%	85.7%	14.3%
9	88.9%	11.1%	76.2%	23.8%
11	77.1%	22.9%	88.5%	11.5%
14	69.4%	30.6%	86.7%*	13.3%*
Mean	77.8%	22.2%	83.9% [@]	16.1% [@]

* N = 5 subjects. For all other groups, N = 10 subjects.

[@] Weighted Mean

Table 7. Comparison of percent correct responses from normally developing and language-deficient fourteen year-old subjects.

Context					
Idiomatic		Literal		Neutral	
Normal	l.l.d.	Normal	l.l.d.	Normal	l.l.d.
90.0%	85.0%*	100%	95.0%*	87.5%	75.0%*

* N = 5 subjects. N = 10 for normally developing subjects.

Supplementary Analyses

Item Effects

The data were examined to determine if possible item effects contributed to the obtained results. Mean percentages of correct responses for each item at each age level were calculated for both language conditions. Two items, Plate #18 (literal) and Plate #21 (idiomatic) were consistently more difficult than any other items for the 5, 7, & 9 year-old normally developing subjects, and for the 7, 9, & 11 year-old l.l.d. subjects. An inspection of Plates #18 and #21, the accompanying stories, and the errors produced suggested the nature of the foils used may have created considerable confusion for the younger subjects. The literal context story for Plate #18 is as follows: "Fred was renting a new apartment for a while before he moved in. He had heard his neighbors were very dirty. He told his landlord he wanted to get the bugs out". The correct choice (see Appendix B) depicts 'Fred', holding a can of bug spray, talking with an old woman (who is clutching a sign titled "Lease") inside a dirty apartment. The favorite choice of the younger subjects was the 'action variant', which depicts 'Fred' actively spraying bug killer, albeit out of doors. Perhaps the younger subjects focused on the activity 'killing bugs' in the foil, whereas the older subjects may have used the extra information in the word "Lease" in the correct choice to help guide their choice. The idiomatic context story for Plate #21 is as follows: "Edward liked to buy lots of things. However, he had just lost his job and had little money. He told his girlfriend he was going to have to tighten his belt". The correct choice shows 'Edward' looking sad while pulling out his empty pockets, with his girlfriend

looking on. To illustrate the "lots of things" that 'Edward' "liked to buy", a big TV and an elaborate stereo system were placed in the background. Again the 'action variant' was the favorite choice of the younger subjects, with 'Edward' showing empty pockets, in this case in front of a parking meter. Running out of money to pay a parking meter is an almost universal experience in a large city, and the younger subjects may well have been influenced by their own experiences in choosing this foil.

General Ability Factors

Perhaps the development of idiom comprehension can be predicted from the development of general ability factors alone. Two measures of general cognitive and linguistic development, nonverbal I.Q. scores and receptive language standard scores, were obtained from all subjects as part of the intake process (Appendix D). To determine if these factors could predict the results obtained from the idiomatic context, separate Pearson r (Levin, 1973) correlation coefficients for both factors were computed for all major (10 subjects per group) age groups in both language conditions. As can be seen from Table 8, these factors did not correlate highly with the experimental results, indicating that the general developmental factors examined were not adequate predictors of idiom comprehension skills.

Table 8. Pearson r correlation coefficients.

	Language	Non-Verbal I.Q.
Age/Years		
5	-.045	.127
7	.029 (.337)	.297 (.304)
9	.137 (-.101)	.510 (-.269)
11	-.306 (.433)	0 (.251)
14	-.048	.133

Numbers in parenthesis () are correlation coefficients for l.l.d. results; unbracketed numbers are correlation coefficients for normally developing students.

* p = .05

Summary

The results presented in this chapter indicated the comprehension of common idioms increased as children mature, and normally developing children were more successful in comprehending idioms than their language-deficient peers. All groups were more successful in understanding the literal over the idiomatic variant, and the neutral context was most difficult of all. Finally, while the older adolescent l.l.d. subjects did not entirely 'catch up' to the levels of idiom comprehension demonstrated by their normally developing peers, the l.l.d. subjects did show strong performance in comprehending common idioms. To be meaningful, these results must be interpreted with regard to the research in the literature on idiom comprehension. The purpose of the following chapter is to discuss the experimental results with reference to the questions posed and with reference to the results of other pertinent studies.

Chapter Four

Discussion

The discussion section will first examine the major issues outlined in Chapter One - developmental trends in normally developing and language-deficient children, the influence of contextual variables on idiom comprehension, and how the processing of idioms can be conceptualized in light of current evidence. Next, some limitations of the present study will be discussed. Finally, some implications for future research will be outlined.

Developmental Trends in Idiom Comprehension

Developmental trends in normally developing children will be discussed first, as most of the acquisition literature to date has been focused in this area and because developmental trends in normal populations provide a frame of reference against which the developmental differences noted in the data on the language-deficient children can be interpreted. The second section discusses developmental trends in language-deficient students, with these results compared to those obtained from the normally developing students.

Normal Development

The results of the current investigations showed the figurative meanings of some common idioms are understood by normally developing children at a relatively young age. The youngest subjects in this study, five year-old kindergarten students, demonstrated the development of idiom comprehension is well begun by five years of age. These results are similar to the findings reported by Ackerman (1982), and Strand & Fraser (1979). These investigators reported that students at

five (Strand & Fraser) and six (Ackerman) years of age understood some common idioms in some circumstances. However, the present results are contradictory to Lodge & Leach's (1975) findings regarding idiom comprehension, where subjects did not demonstrate comprehension levels beyond chance on a picture-pointing task until 12 years of age. Lodge & Leach's findings, as noted in Chapter One, were limited by serious methodological flaws, and the present results cast further doubt on the validity of their findings.

It was suggested in the 'Statement of the Problem' that Ackerman's (1982) and Strand & Fraser's (1979) results might underestimate the degree of early competence. Both of these experiments required subjects to provide verbal explanations for the figurative meanings of idioms, a task which confounded the measurement of comprehension development with significant expressive demands. The present results indicated early competence is indeed more precocious than suggested by these two studies. Ackerman (1982) reported his youngest subjects ($M = 6$ years, 4 months) provided idiomatic explanations for idioms in the idiomatic context condition in 30.6% of all instances. Strand & Fraser's (1979) five year-old subjects provided idiomatic explanations 33% of the time. The five year-olds in the present study, using a picture choice format, made 48% correct selections. These results suggest that the picture-choice format for measuring comprehension, by reducing the task demands of the response required, allowed for the demonstration of earlier and/or greater comprehension competence than demonstrated by subjects required to give verbal explanations of meanings. Subjective observations of the quality of the five year-olds' responses to the idioms reinforce

this claim for early competence. That is, most of the correct choices were made with little hesitation, after a subject systematically scanned the four pictures on the plate. Some correct 'guessing' did seem to occur (i.e., a choice was made after several 'false starts' with hesitation, puzzled looks), but these were quite infrequent.

While the five year-olds were clearly well engaged in the process of acquiring an understanding of idioms, they by no means understood all the idioms presented. Significant growth in comprehension scores occurred between five and eleven years of age. While significant mean differences were also found between 7 - 14 years, an overall plateau effect in the growth of comprehension is apparent from an inspection of Figure 1. These results are consonant with the findings of Ackerman (1982) and Strand & Fraser (1979).

The present results, together with Ackerman (1982) and Strand & Fraser's (1979) findings, indicate normally developing children begin to develop comprehension of idioms at or before five years of age, and comprehension develops at a relatively even rate over the subsequent six years. These results therefore challenge the hypothesis generated from the 'multiple-processes' view of idiom comprehension developed by Clark and his associates (1974, 1979), that idiom comprehension would be a relatively late-developing phenomenon, due to the complexity of the proposed processing mechanisms. Such is obviously not the case. Unless young children possess heretofore undocumented levels of cognitive sophistication needed to support 'multiple-processes' as proposed, simpler processing mechanisms must be used by the youngest subjects in order to comprehend idioms.

As noted, comprehension of the target idioms showed a plateau effect at around 90% correct for both the 11 and 14 year-old students. Why, if the idioms used are commonly occurring, did not the 14 year-olds score 95-100% correct? There are two possible reasons for this. First, idioms have strongly conventionalized, nonliteral meanings. It is, therefore, likely that children learn idioms through pedagogical interchanges with knowledgeable others, and/or through repeated incidental exposures within meaningful discourse. While the stimulus items for the present study were rated by adult judges as being frequently occurring idioms, this is no guarantee that all the elementary and junior high school students have had the same exposure to these idioms. It is possible some of the idioms were unfamiliar to some of the older subjects. Another reason for the plateau effect is that of stimulus artifact: two of the four errors made by the 14 year-olds were made on Plate #25. This plate, as noted in the 'Results' section, was quite confusing to students because of the nature of one of the foils used. Thus, the impact of an experimental artifact can account for 1/2 of the remaining variance at this age level.

Development in Lanugage-Deficient Students

The present results indicate language-deficient students do have significantly more difficulty comprehending idioms than do their normally developing peers. At each age level the l.l.d. students consistently underperformed their normally developing peers. It would be surprising if such were not the case, given the significant deficits in language development demonstrated by these students. However, the issue is not 'is there a delay in idiom comprehension?', but rather, as claimed by

Wiig & Semel (1984) and others, 'is the comprehension deficit considerably worse than the overall delay in language development'. An inspection of Figure One shows the growth curve of idiom comprehension for the l.l.d. students shadows the growth curve of the normally developing students, with the l.l.d. students lagging two-to-three years behind their normally developing peers. This delay is similar to the lag in receptive language development shown by the l.l.d. students in relation to their normally developing peers. Thus, the results of the present study do not support the commonly held idea (see, for example, Wiig & Semel, 1984; Blue, 1981) that all forms of figurative language present unique comprehension problems for language-deficient children.

The descriptive data obtained from the 14 year-old l.l.d. students also argues against the idea that idioms present unique comprehension difficulties for l.l.d. students. The 14 year-olds obtained idiom comprehension scores of 85% correct, which compares quite favorably with the 90% correct scores obtained by their normally developing peers. Donahue & Bryan (1984) have argued that because l.l.d. students tend to be socially isolated, are less likely than normally developing children to ask for clarifications of ambiguous messages and do not simply 'grow out' of earlier deficits in acquiring syntactic and semantic structures, these students might be hindered in the learning of idiomatic expressions. However, the picture is not that of an island of deficient figurative comprehension skills, surrounded by a rising tide of competence for literal language, as painted by Wiig & Semel (1984), and others, nor of l.l.d. students inhabiting a competence ghetto for figurative language. Rather, these older l.l.d. students appear to do well in the

acquisition of common idiomatic meanings, showing only the generally poorer competence deriving from the overall deficits in language functioning.

Contextual Influences and Idiom Comprehension

The response options differed somewhat among the different story contexts. In the literal and idiomatic-bias contexts subjects were limited in their responses to choosing either the correct picture, or an incorrect foil. In the neutral-bias context a subject could select either a correct literal or correct idiomatic picture, or an incorrect foil. Due to these differences the discussion of contextual influences on idiom comprehension will focus first on the results from the literal and idiomatic-bias contexts, than in greater depth on the results from the neutral context, as the response options for this context suggest these results to be of particular interest.

All subjects at all ages in both language conditions were more successful at comprehending the literal variants of the target idioms than they were at comprehending the idiomatic meanings. This is not a surprising finding, as every related developmental study of idiom comprehension reported in the literature has found similar relationships. There are several significant implications from this finding, however. First, it underlines definitional differences between idiomatic and literal forms. That is, comprehension of the literal meanings of the constituent elements of an idiom is not sufficient for successful comprehension of both literal and figurative forms (Rumelhart, 1979), the fundamental differences in semantic information conveyed are critical. This finding also indicates that, while idiom comprehension

begins at an earlier age than many investigators had presumed, nevertheless consistent differences exist in the rate of acquisition of meaning between literal and idiomatic forms. That is, this finding does show the 'order of magnitude' differences between literal and idiomatic forms implied (for rather different reasons) by investigators such as Clark & Lucy (1974) and Wiig & Semel (1984), are not present. However, developmental differences do exist between the literal and idiomatic forms, although they are differences of degree, not magnitude.

The students' responses to the neutral-bias context will be discussed in some detail, as the response preferences shown were other than what was originally anticipated by the investigator. The normally developing students showed a strong preference for choosing the correct literal over the correct idiomatic variant in the neutral context condition at all age levels. Such a finding is at first glance paradoxical, especially for the older students where idiom comprehension scores were high. It is reasonable to expect that, if idioms are learned as single lexical entries, as argued by Swinney & Cutler (1979), then high levels of comprehension in the idiomatic context might predict strong comprehension levels in the neutral context, as Ackerman (1982) found.

However, such is not the case. This may be because, as Strand & Fraser (1979) reasoned with reference to Lodge & Leach's (1975) results, children may use what these authors describe as a 'literalizing strategy' when confronted with an ambiguous choice. That is, when presented simultaneously with picture choices representing plausible alternative interpretations (literal and idiomatic) to the target idiom, children will consistently choose the literal variant. This is not because the

children do not comprehend the idiom, but rather because the 'literalizing strategy' is favored by children when confronted with any linguistic ambiguity, and the picture choices represent one such ambiguous situation. This reasoning, if correct, could account for the present results.

Alternatively, it may not be reliably possible to construct entirely 'bias-free' story contexts, as Ackerman (1982) had intended. At least two potential sources of difficulty exist. First, subtle biases in meaning could be built into the story contexts. For example, the story for stimulus item #8 (Alice said, "You're pulling my leg.") illustrates such an unintended bias. Although Alice was talking with the man, he begins to 'act strange', suggesting a physical action in preference to the psychological action of 'pulling someone's leg' (telling an untruth). If someone behaves strangely, the connotation is worrisome (someone falling ill, for example), or sinister (i.e., Norman Bates, in Hitchcock's Psycho), but not 'teasing'. Thus a listener may be biased toward the literal/physical over the figurative/psychological actions depicted. Such appears to be the case for several of the items.

Another potential source for response bias lies with the amount of information provided by each story context. Ackerman (1982) indicated his story contexts were balanced for overall length. While this is the case overall, several neutral stories are noticeably truncated in comparison to their literal and idiomatic variants. An example of this are the stories for the idiom 'He climbed the walls'. The literal ('Robert was getting in shape so he could pass the physical for the marines. He "climbed the walls".') and idiomatic ('Robert was sick in bed and

had to stay home for several weeks. But he was full of energy. His mother said "He climbed the walls.") are self-contained, information rich stories. The neutral story ('Robert went home for dinner. He "climbed the walls."') is both brief and more nebulous than neutral. The subjects' preference for the literal picture may represent, as Strand & Fraser (1979) have argued, more of an indication of how young children deal with ambiguous situations, not of what they understand about figurative meaning per se.

The results across contexts did not show significant effects for context with the l.l.d. students, as were found with the normally developing students. However, the overall pattern of results was similar for both language groups. Why would the differences between contexts be nonsignificant for the l.l.d. students, when contextual differences were significant for their normally developing peers? A clear answer is not apparent from the present results. It may be that, contrary to the reasoning of Wiig & Semel (1984), Donahue & Bryan (1984) and others, idiomatic forms do not present uniquely difficult comprehension problems for l.l.d. children. Instead, the current results may demonstrate just the opposite. Rather than being uniquely difficult forms, problems in idiom comprehension may be no different in substance than the general problems in language comprehension experienced by these students. Not only did the l.l.d. students show similar (but delayed) patterns of competence development in relation to their normally developing peers, but the effect of language delay was to compress the available range of development. That is, these students demonstrate general problems in language comprehension, and these effects are apparently equivalent

across both literal and idiomatic forms. If true, the distinction between 'literal' and 'idiomatic' forms is an inaccurate heuristic device with regard to these students.

Comprehension Processes

How then, do children develop an understanding of idioms? The present results do not support the 'multiple-processing' model proposed by Clark and his colleagues (1975; 1979). As noted in the 'Review of the Literature', this model would predict the relatively late acquisition of competence, given the sophisticated cognitive processing required for the derivation of figurative meanings. This prediction is not supported by the results of the present study. Normally developing five-year olds understood the figurative meanings of some idioms in some contexts, and most of the common idioms used in the study were understood by the normal 11 year-olds. This indicates successful idiom comprehension does not require the sophistication of later-developing cognitive processes, as suggested by Lodge & Leach (1975), or of complex, multi-stage processing, as Clark and his colleagues have suggested (1975; 1979). Rather, idiom comprehension processes appear not to be substantially different from other language comprehension processes, as Rumelhart (1979) has argued.

Yet, idioms are clearly different from literal forms in some important ways. All the subjects in this study were more successful in comprehension of the literal over the idiomatic variants of the idioms. As Ackerman (1982), Strand & Fraser (1979) and others have noted, direct exposure to idiomatic forms undoubtedly influences the acquisition of comprehension for any given idiom. Since the meaning of an idiom cannot

be derived from an analysis of the literal meanings of the words comprising the idiom, children have to encounter idioms in meaningful contexts if they are to learn their meanings. In these encounters children may learn the meaning of a given idiom simply by asking a knowledgeable other (parent, older sibling, etc.) what the idioms means.

The direct learning of idioms through questioning of a knowledgeable other does not seem a sufficient explanation of how most common idioms are learned. As Markman (1981) has noted in her studies on comprehension monitoring, younger children are not always aware that they do not share a speaker's (or other listener's) understanding of what was intended to be communicated. Children believe they understand a message, when in fact they do not. From this, it is likely that there are many instances in which idioms are encountered in which children may believe they understand the intended meaning, and thus will probe directly for the intended meaning.

How else then, might idioms be learned? As argued above, common comprehension processes are likely used for both 'literal' and idiomatic forms. Wittgenstein (1958; 1970) has argued word meanings do not have a singular referential correspondence between a lexical item and an entity which the item stands for. Instead, meaning is accreted through a series of 'language games', in which the child learns a set of rules for how and when to use given lexical items in different contexts. Early in the learning process a child's understanding of how a word can be used would of necessity be quite inexact. Children would tend to either limit use to a few highly specific situations (contexts within which the item had already been encountered), or overgeneralize

to all similar contexts, at least until sufficient experience had been acquired to induce the parameters of appropriate meaning and use.

There is no a priori reason to suspect that the development of idiom comprehension proceeds in a different manner. As Strand & Fraser (1979) noted, many of their younger subjects provided idiomatic explanations that were partially correct. This indicates that these subjects were sensitive to nonliteral meanings. However, the childrens' explanations of the figurative meanings were not isomorphic with the meanings adults attached to the idioms. Possibly this is because the build-up of meaning through exposure to the idiom in diverse contexts was incomplete. This interpretation is consistent with the present results. That is, the acquisition of comprehension competence for common idioms evolved in a generally steady manner over an extended time frame for both the normally developing and language-deficient students. If comprehension competence was predicated upon the development of sophisticated cognitive processes, as Clark and his colleagues (1974; 1979), and Lodge & Leach (1975) have inferred, one would predict that acquisition would occur not just relatively late, but within a relatively brief time frame, as the requisite stage of cognitive development was attained. However, this did not happen; the results are better accounted for through an accretionary process.

While an accretionary process explanation is parsimonious with these results, it does not directly explain why comprehension of idiomatic forms was consistently more difficult than comprehension of the literal variants. Indeed, the current results do not provide direct evidence from studies of mother-child early language interactions (Snow &

Ferguson, 1977), to anticipate that very young children are not systematically exposed to idioms in meaningful dyadic interactions during their first years of life, as the foci for language mediation tend to be tied to immediate, three-dimensional environments and/or salient emotional states. Thus the presentation of idioms, lexical inventions which serve to enrich and elaborate upon the vehicles available for developing shared meanings, would likely be deferred beyond a child's first few years, when language learning focuses on attaining the fundamentals of joint referential meanings. However, at this point, such a conclusion is purely speculatively.

Limitations of the Present Study

There are several important limitations on the results and conclusions of this present study. These are outlined below.

Idioms are, as noted in the 'Definitions' section, figurative forms with strongly conventionalized meanings, with the meanings of many idioms derived from local customs (Ortony, et al, 1978). Hence it would be inappropriate to claim the development of comprehension for the particular idioms used in this study will be identical for children in different geographical locales. This caution was clearly illustrated to this investigator during the stimulus selection process. Based on personal introspection, a list of ten idioms thought likely to be rated as common/very common by the four local judges was developed by the investigator (who is not local). When the judges ratings were tabulated, only 6/10 of the idioms rated as common/very common by the investigator were in agreement with the local judges' ratings. Unfortunately, none of the commercially circulated tests and therapeutic materials include

sufficient warning regarding the degree to which many idioms are locale-specific.

Another potential limitation concerns the rating process for identifying 'common' idioms. Adult judges were used to select the stimuli for this study. Yet, at present no solid evidence exists indicating idioms common to adult interchanges are also uniformly common to children's sociocultural milieu. Also, some idioms might be judged by adults as common due to their frequency of occurrence in literature, not in conversation. Unfortunately, the judges were not instructed to try to separate out this potential confound in the rating process. These potential selectional biases could be reduced by using judges who are students in the publically-financed education system, yet who are likely competent in comprehending common idioms. Normally developing 11th & 12th grade students might be appropriate judges, for example.

The response plates used for this study were obviously challenging in some unexpected ways. Both Lodge & Leach (1975) and Strand & Fraser (1979) reported all of their subjects understood all of the literal meanings of their target idioms. Yet, in the present study this uniform level of competence was not reached until 9 years of age by the normally developing students. As discussed previously, some of the response plate foils were confusing for the younger subjects in ways not adequately anticipated by the investigator prior to the data collection process. Given the relative difficulties presented by the (typically) easier literal plates, the results obtained from the idiomatic-bias contexts were possibly similarly affected - i.e., even earlier, stronger competence might have been demonstrated if the foils were more grossly

different from the target plate.

Given the heterogeneity which characterizes language-deficient populations, generalization of the present results onto different populations of students with language deficits must be done with great caution. All of the l.l.d. students in the present study met clearly defined criteria designed to limit developmental deficits to the area of language as much as possible. Thus, this group of subjects was a selected group, of which no claims are made that they represent a cross-sectional sample of children with language deficits. Such is obviously not the case, given the range of physical and intellectual deficits and disorders from which language deficits are routine sequalea.

It should also be noted that the l.l.d. students in the present study were all in specialized remedial settings at the time of testing. Some students had been in these settings for several years. While there were pedagogical differences among the different classes, all appeared to provide their students with opportunities for constructive socialization and with exposure to literature through both readings and alternative media (tapes, peer tutoring, etc.). Such experiences are not always available to l.l.d. students prior to their identification and placement as special needs students. Many of these unidentified or unplaced students are, as Bryan and her colleagues (1974, 1976, 1980) have documented, isolated from the social and academic routines of mainstream classrooms. It may be that these 'isolated' students would demonstrate greater idiom comprehension deficits than shown by the l.l.d. students in the present study, since the 'isolated' students are presumably shut out of important socializing environments which the

present study's students have greater access to within their resource classes.

Implications for Further Research

Further studies of normal comprehension processes are certainly indicated from the results of this and related studies. The three studies which have documented the early development of comprehension competence - Ackerman's (1982), Strand & Fraser's (1979), and the present study - have not demonstrated within what age range the comprehension of idioms first develop, since the five-year olds in the present study were relatively well advanced in their comprehension of common idioms. Given Winer's (1979) findings for metaphoric use in normally developing children as young as two and three years of age, early idiom comprehension skills may begin to develop shortly after the development of the base comprehension of the syntactic and component lexical items which configure the idiom.

Further examination of idiom comprehension skills in language-deficient populations are strongly indicated from the results of this study. To examine the idiom comprehension skills of children who met the screening criteria for this study, but who had not yet been placed (or had only recently been placed) in a resource class would be of interest. Perhaps, as noted in the previous section, these l.l.d. students would show idiom comprehension deficits greater than that predictable from their general language delays, since some of these students would potentially be more 'isolated' within the mainstream classroom. If this hypothesized difference in comprehension competence is verified by further research, the pedagogical implications would be significant.

For example, special means for the direct teaching of idioms, as suggested by Wiig & Semel (1984) and others, would not be required. Rather, pedagogical settings which provided significant opportunities for constructive socialization and alternative access to literature would facilitate idiom comprehension skills without direct training in the meanings of a selected set of idioms. This is purely speculative at this time, however.

As noted in the 'Review of the Literature', considerable ad hoc commentary exists in the speech pathology literature which indicates that figurative forms, including idioms, are uniquely difficult for language-deficient children to comprehend. This study's results do not support such a conclusion. Possibly this commentary represents inappropriate overgeneralization from limited population samples, an error that the speech pathology literature has been prone to in the past. Additionally, these ad hoc comments may have been based upon observations from mixed groups of language-deficient children, such as low I.Q. children, hearing impaired or neurologically impaired children, and from children for whom English is a second language. Such a condition would not be surprising, given Stark & Tallal's (1981) report on their selection of a group of children with 'specific language deficits', where 70% of the children referred to them by speech-language pathologists did not meet Stark & Tallal's selection criteria, even though the general criteria had been circulated to the referring clinicians prior to these clinicians' initial identification of potential subjects. To determine whether different categories of language-deficient children show differential idiom comprehension skills, these populations should

be carefully identified and systematically tested.

Conclusions

The results of this investigation support the following conclusions:

1. Comprehension of idiomatic meanings has begun to develop at or before five years of age in normally developing children.
2. Growth in the comprehension of common idioms is vigorous between five and eleven years of age, and continues at a considerably slower rate after eleven years of age in normally-developing children.
3. The development of idiom comprehension in language-deficient children is slower than for the normally-achieving students. However, the developmental lag is essentially consonant with the general developmental lag in language skills. There is no justification for saying that this figurative form presents unique comprehension problems for children with delayed language development.
4. There is no evidence to support the notion that children resort to any special form of processing in order to comprehend the figurative meanings of idioms. Rather, comprehension strategies for literal and idiomatic forms appear to be essentially the same.
5. Adolescent l.l.d. students do not 'catch up' completely to their same-age normally-developing peers in idiom comprehension by 14 years of age. However, the l.l.d. adolescents do demonstrate considerable competence in comprehending common idioms.

Stimuli: Target Idioms and Story Contexts¹

Training Items:

1. Ralph was meeting his girlfriend's parents for the first time, and everyone felt uncomfortable. After he had been at the house for a little while, he told a joke, and 'broke the ice'. (idiomatic)
2. Ralph was meeting his girlfriend's parents for the first time and felt awkward. They asked him to make some drinks. He went into the kitchen, and broke the ice. (literal)
3. Cathy told her friend Ellen about a man who wanted to buy her car. However, that night Ellen called the man up and sold him her car. Cathy said that was a 'stab in the back'. (idiomatic)
4. Cathy told her friend Ellen about a man who wanted to buy her car. Ellen argued violently that it was her turn to make a sale. As Cathy walked away she was stabbed in the back. (literal)

Experimental Stimuli:

1. Billy was talking very loudly at a party and was getting everyone upset. Jennifer said to the hostess, 'Billy's lost his marbles'.
(idiomatic)

Billy was at a party and was talking to everyone. Jennifer said to the hostess, 'Billy's lost his marbles'. (neutral)

2. Billy was very upset at his friend's birthday party, and was hunting everywhere. His friend asked what was wrong. Jennifer said 'Billy's lost his marbles'. (literal)
3. David's team was way behind. The coach called time out and began to send in substitutions. David said the coach was 'throwing in the towel'.

David was not doing very well. He was very tired and sweaty. The coach threw in the towel. (neutral)

4. David was not doing very well in the match because he couldn't see. The sweat kept coming into his eyes. The coach threw in the towel. (literal)

5. Robert was sick in bed and had to stay home for several weeks. But he was full of energy. His mother said 'he climbed the walls'. (idiomatic)

Robert went home for dinner. He climbed the walls. (neutral)

6. Robert was getting in shape so he could pass the physical for the Marines. He climbed the walls. (literal)

7. Alice was at a picnic. The man she was talking to began to talk about his own life. Alice said 'you're pulling my leg'. (idiomatic)

Alice was at a picnic. The man she was talking to began to act strange. Alice said 'you're pulling my leg'. (neutral)

8. Alice was at a picnic. The man she was talking to began to wrestle with her. Alice said 'you're pulling my leg'. (literal)

9. Mr. Johnson was feeling very sick all day, and couldn't do his farm chores. The next day he 'kicked the bucket'. (idiomatic)

It has been a long day and Mr. Johnson was tired. After dinner he walked out his back door and kicked the bucket. (neutral)

10. It had been a long day and Mr. Johnson was tired. It was dark but he had one more chore. He stepped into the barn, and kicked the bucket. (literal)

11. Lisa did everything very slowly and was always wrong. Her boss said to his friend that Lisa didn't 'play with a full deck of cards'. (idiomatic)

Lisa was very poor but very friendly and gay. When she started to work her boss said 'she didn't play with a full deck of cards'.

(neutral)

12. Lisa was very friendly and wanted her friends to come over that night. However her baby sister got into Lisa's things. Her friends observed that 'she didn't play with a full deck of cards'. (literal)

13. Frank and Mike started to work at the same place at the same time. However, Mike got promoted and Frank didn't. Frank found out and said he felt he was 'slapped in the face'. (idiomatic)

Frank and Mike started to work at the same place at the same time. However, Mike got promoted and Frank didn't so Frank still had to do dangerous work in the forest. Frank felt he got slapped in the face.

(neutral)

14. Frank and Mike did dangerous work in the forest. One day Mike was leading and he pushed a tree. Frank felt he was slapped in the face.

(literal)

15. Janice thought there was something wrong in the way things were going. She wanted to tell the president, but her boss said, 'don't rock the boat'. (idiomatic)

Janice had an idea that would make everyone safe. However, Howard said 'don't rock the boat'. (neutral)

16. Janice had an idea that would help to make the sails work. However, Howard said, 'don't rock the boat'.

17. Fred bought a new car. The salesman told him to test it around home for the first month so he could 'get the bugs out'. (idiomatic)

18. Fred was renting a new apartment for a while before he moved in.

He had heard his neighbors were very dirty. He told his landlord he^{73.} wanted to 'get the bugs out'. (literal)

19. Mark's dad was a very good hunter, and Mark had just shot his very first deer. His mom said Mark was 'following in his father's footsteps'. (idiomatic)

It was stormy out. Mark's dad loved to go out hunting no matter what the weather, and Mark wanted to find him and hunt too. His mom said Mark was 'following in his father's footsteps'. (neutral)

20. It was very stormy out and the snow was deep. Mark's dad was out hunting deer and Mark wanted to find him and hunt too. His mom said Mark was 'following his father's footsteps'. (literal)

21. Edward liked to buy a lot of things. However he had just lost his job and had little money. He told his girlfriend he was going to have to 'tighten his belt'. (idiomatic)

Edward liked to buy a lot of food. However, food had gotten so expensive that he cut down on his food the last two months. Edward said to his girlfriend that he was going to have to 'tighten his belt'.
(neutral)

22. Edward liked to buy a lot of food. However, food had gotten so expensive he had lost a lot of weight and his pants were too large. Edward told his girlfriend that he was going to have to 'tighten his belt'.
(literal)

23. Karen was up in her room doing her homework when she heard her brother Larry talking to their mother. Larry was blaming Karen for something he had broken. Karen said 'I'll fix his wagon'. (idiomatic)

Karen was up in her room doing her homework when she heard her brother Larry talking to their mother. Larry was upset over something

that was broken. Karen said, 'I'll fix his wagon'. (neutral)

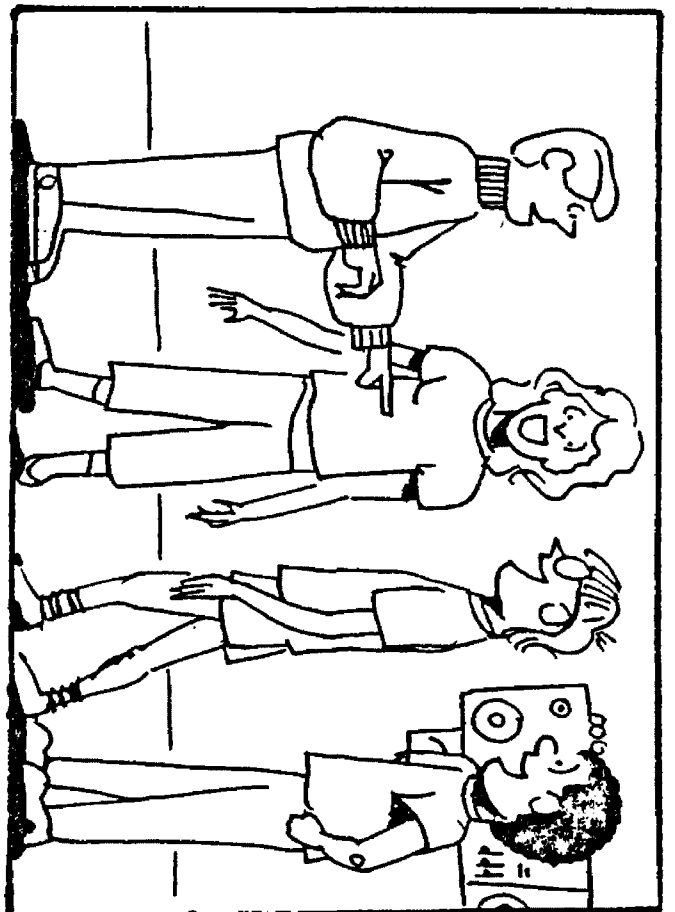
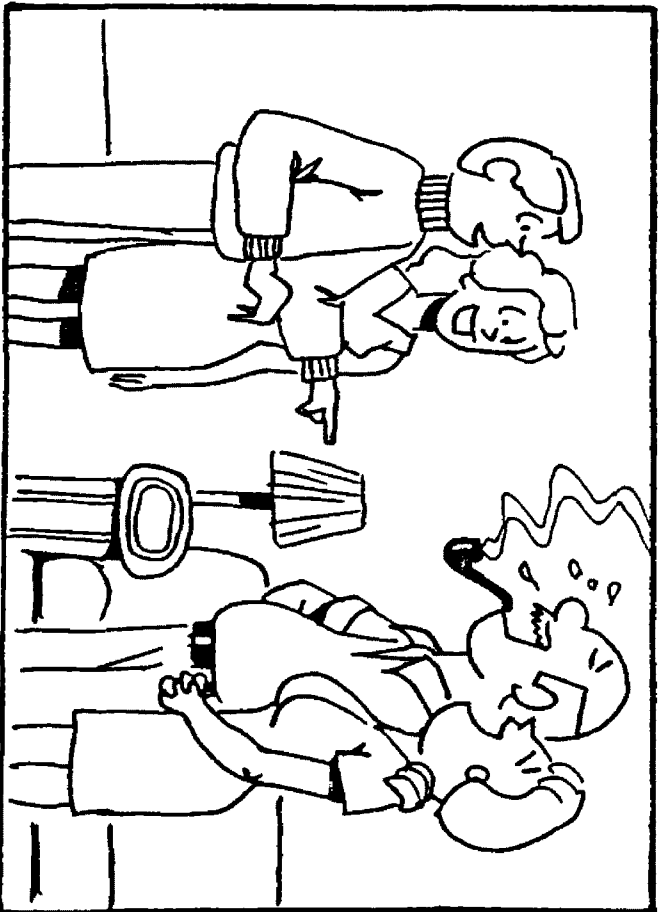
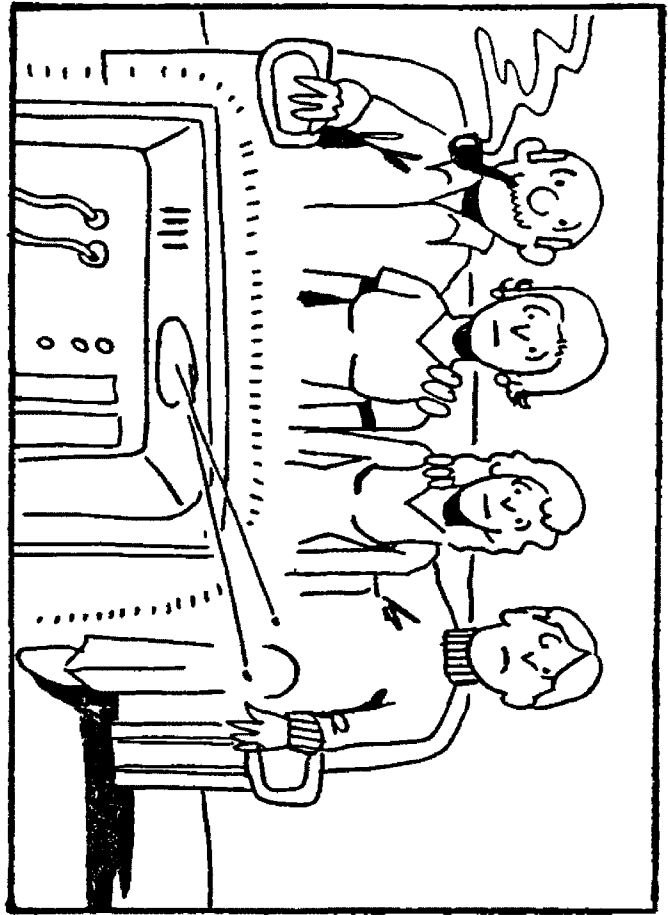
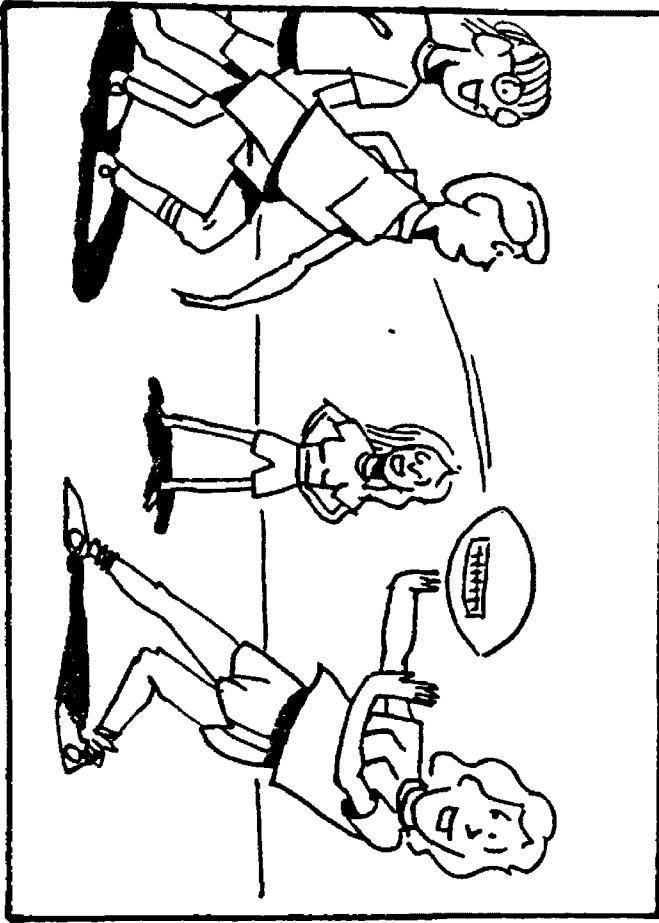
24. Karen was always helping her little brother Larry. This time Larry was crying to their mother over something that was broken. Karen said 'I'll fix his wagon'. (literal)

¹ Used with the kind permission of Dr. Brian Ackerman

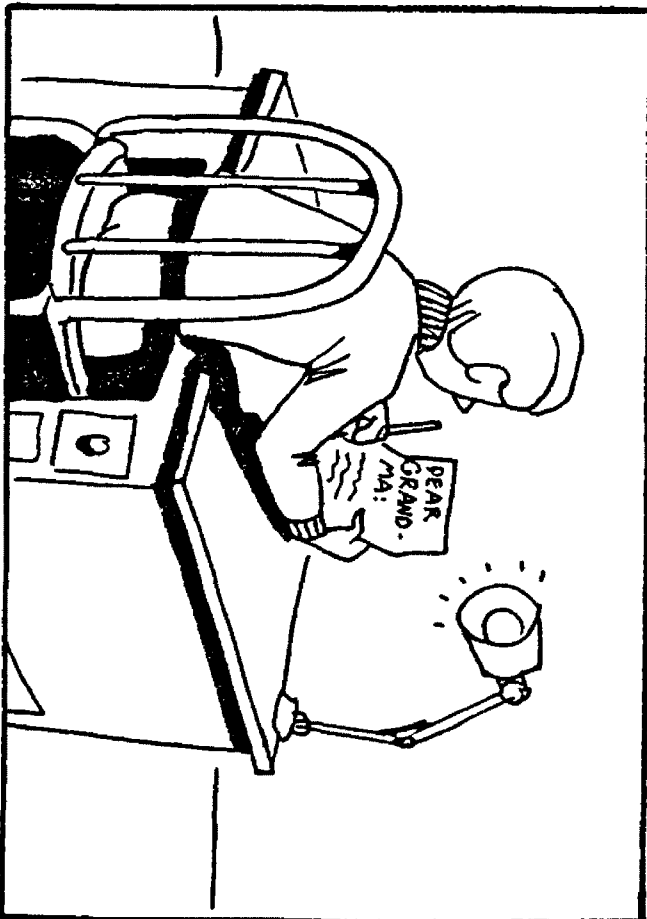
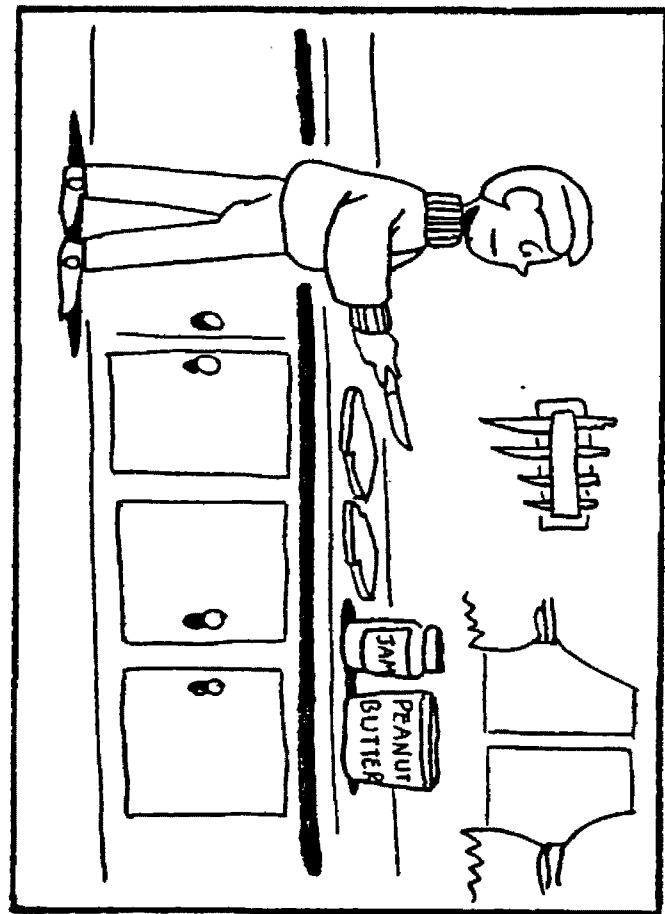
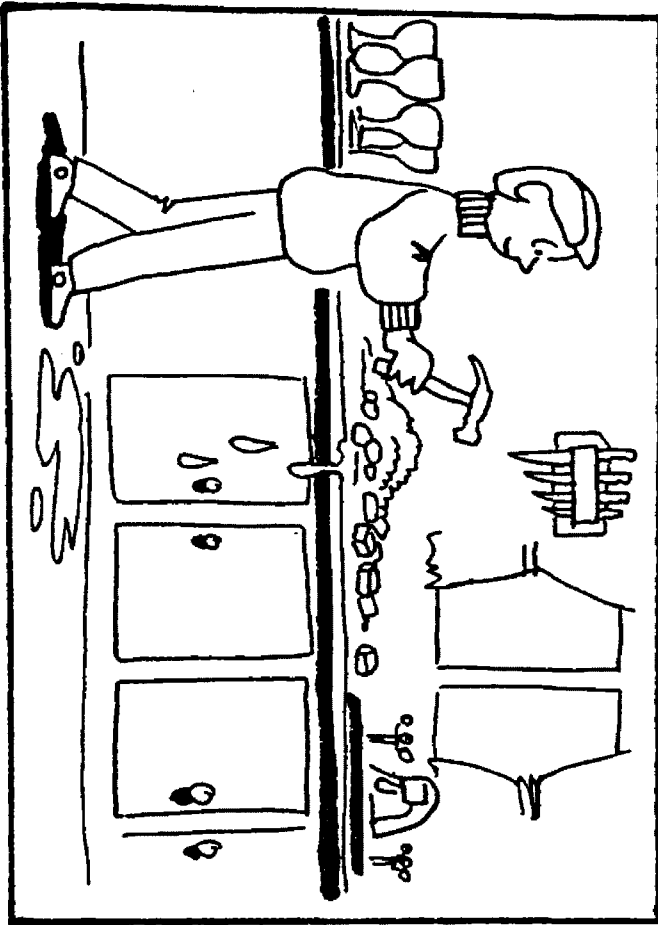
Appendix B

Stimulus Plates

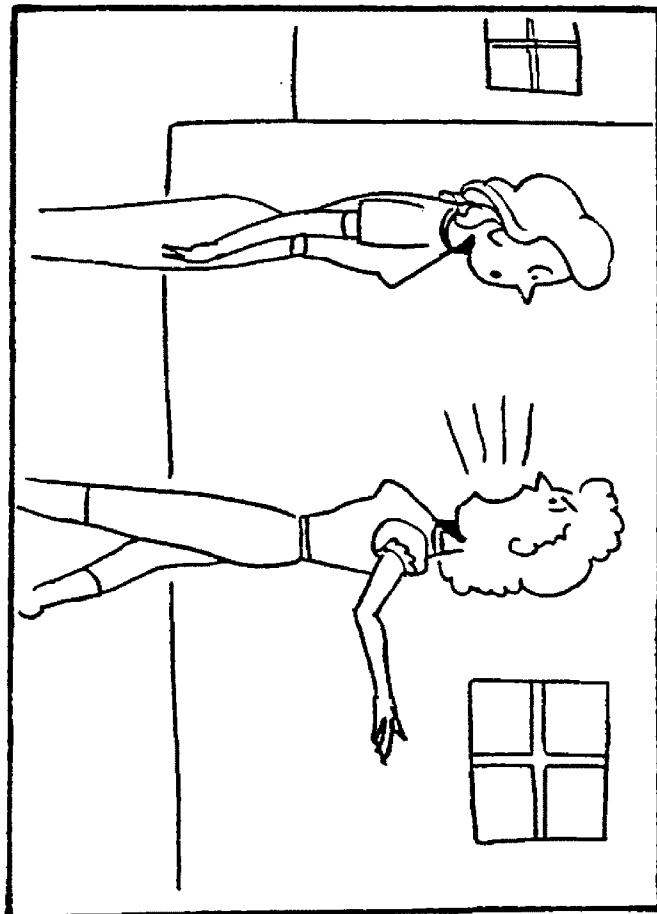
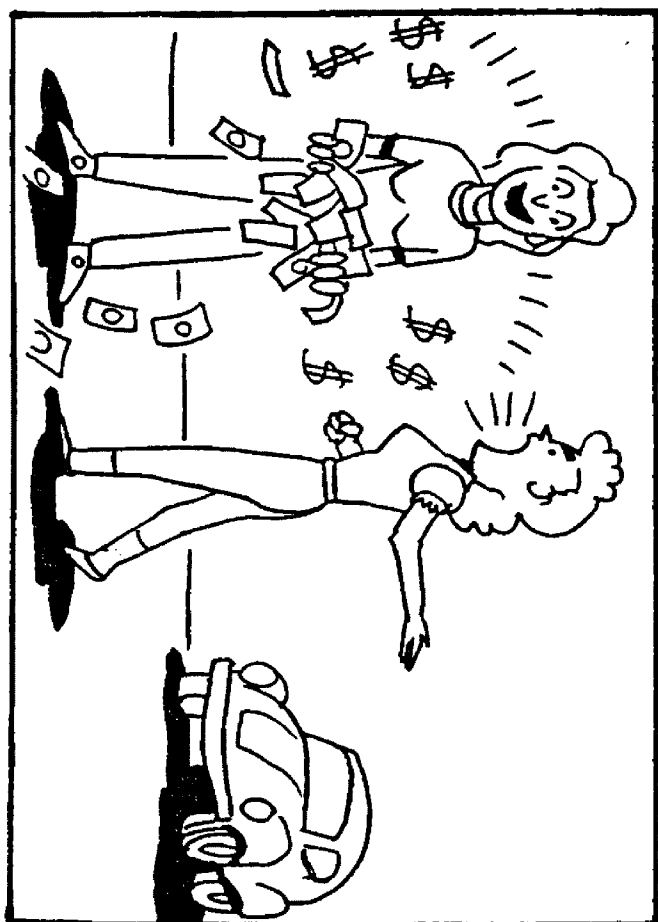
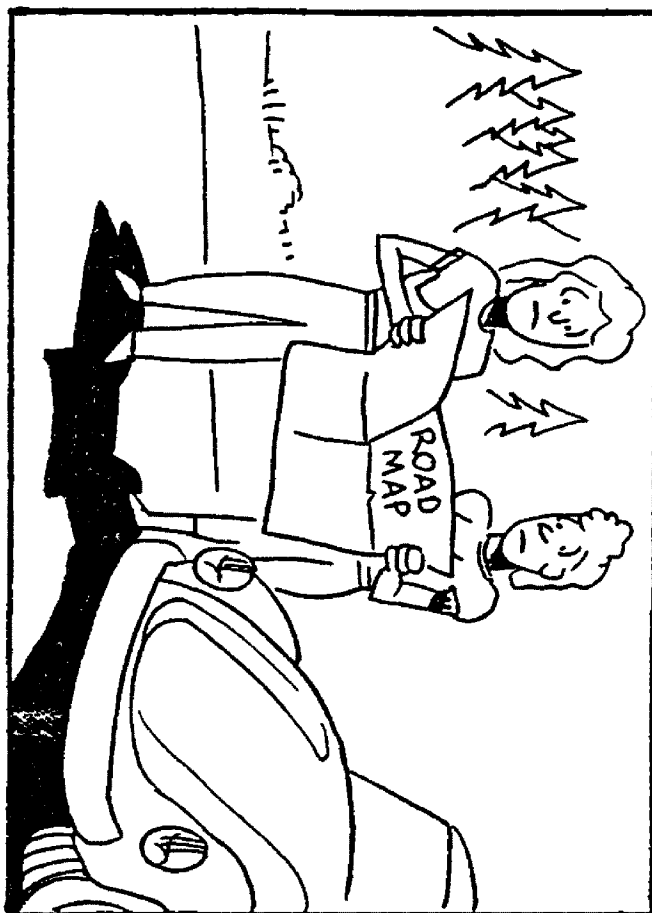
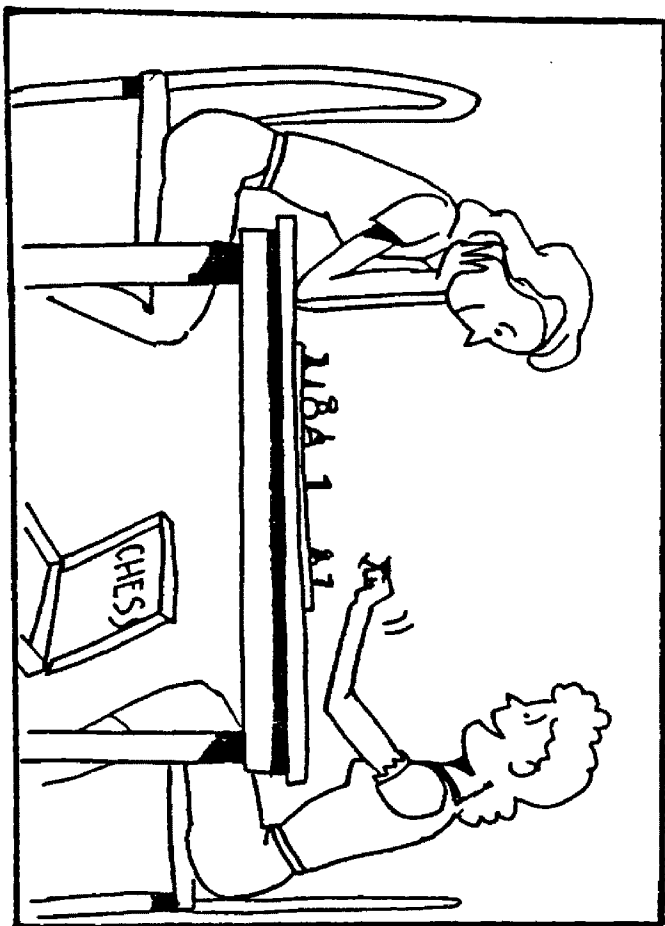
The pictorial stimuli used in this experiment are reproduced in this appendix.



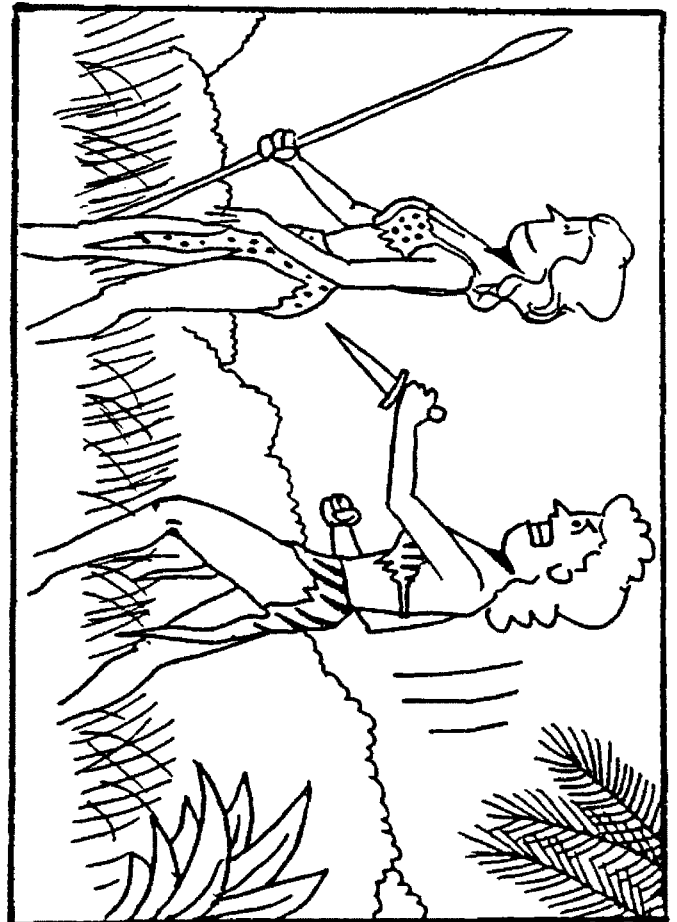
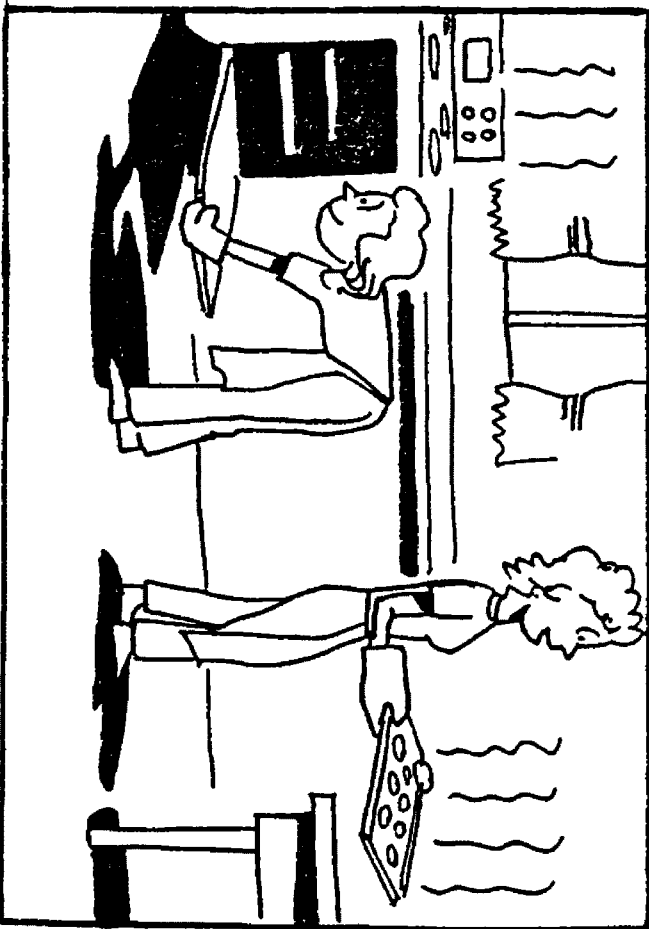
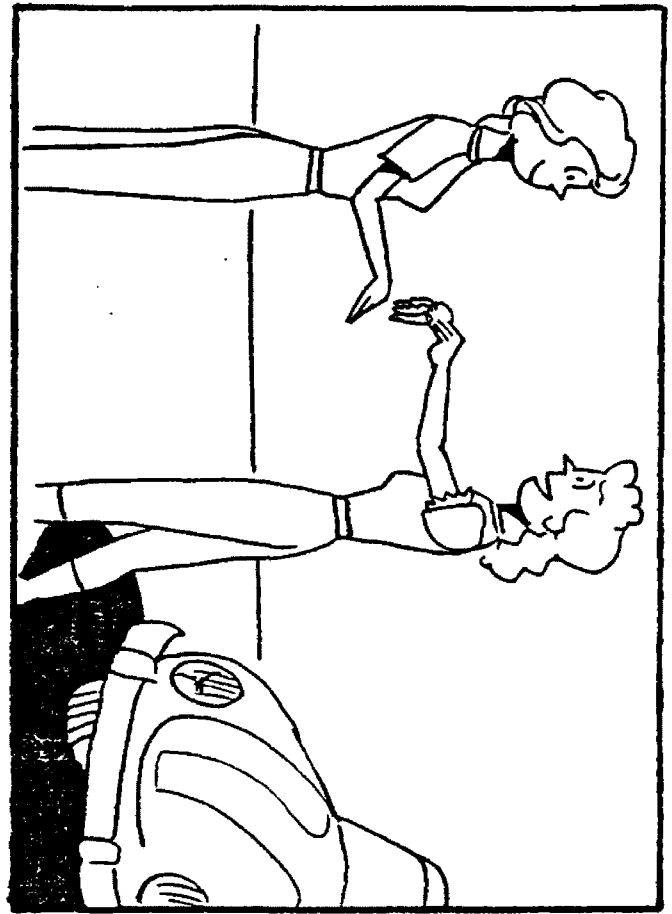
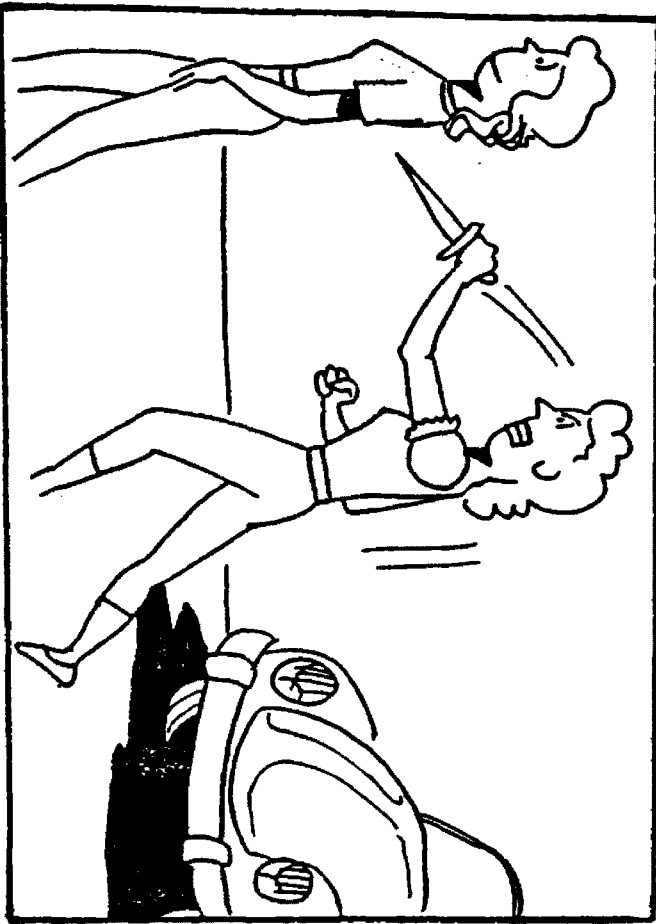
Training Plate 1



Training Plate 2



Training Plate 3



Training Plate 4

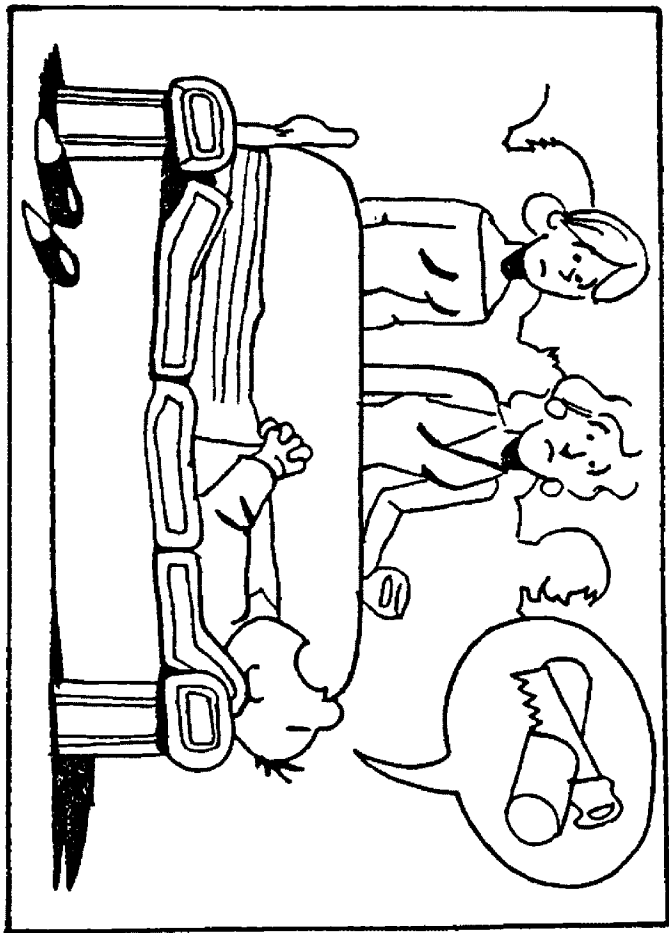
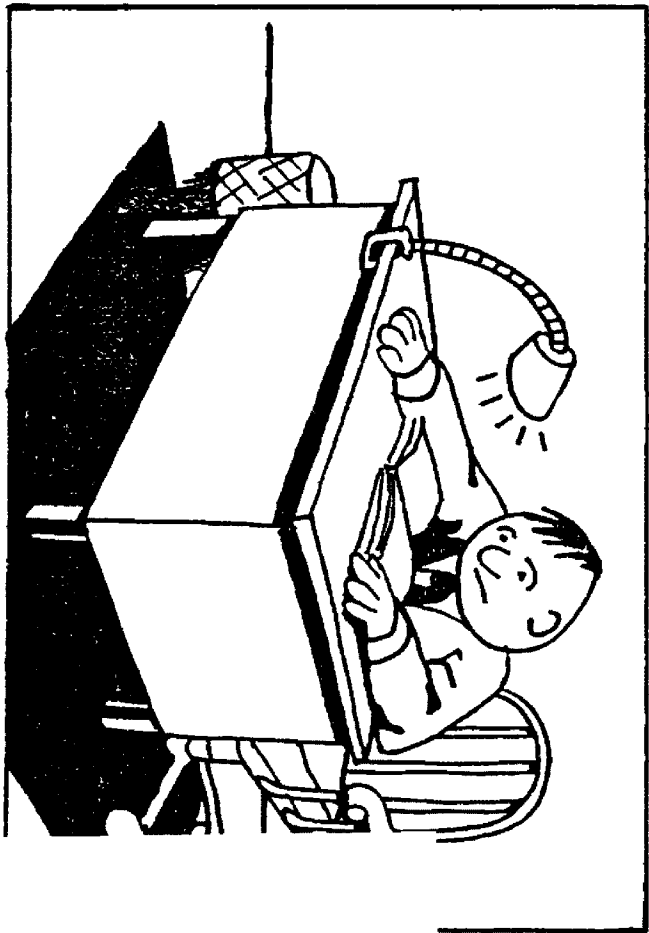
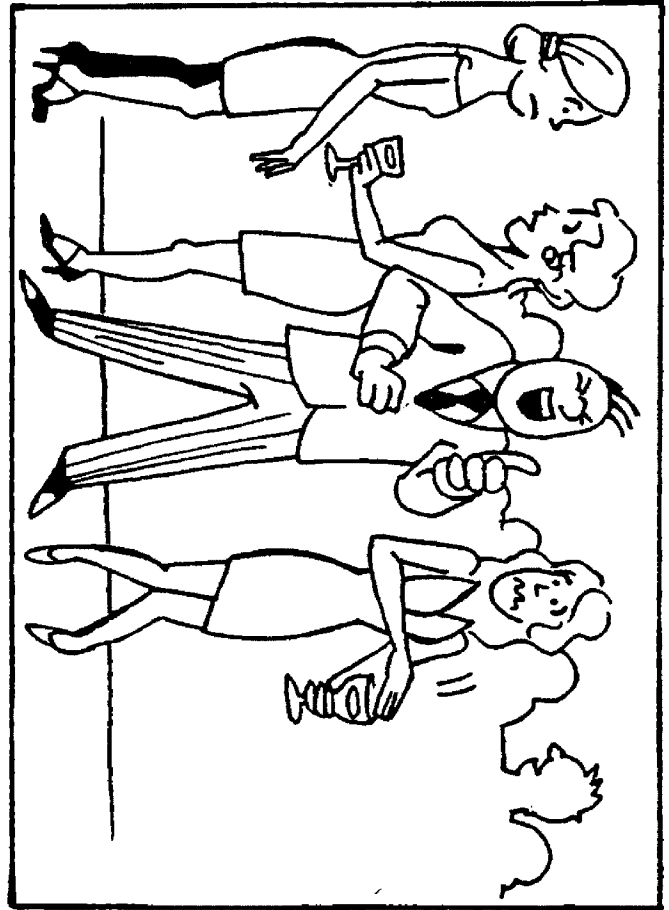
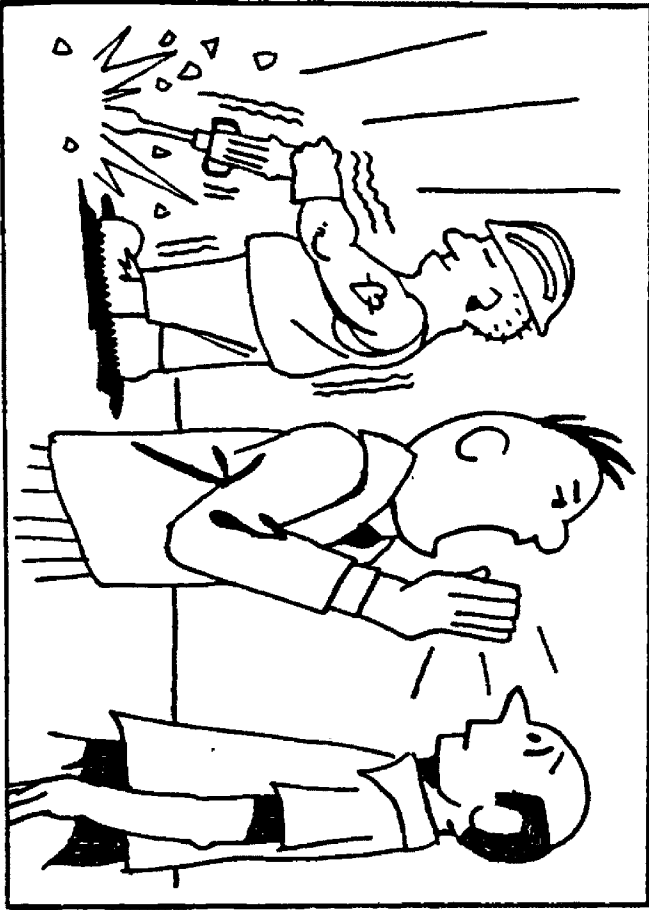


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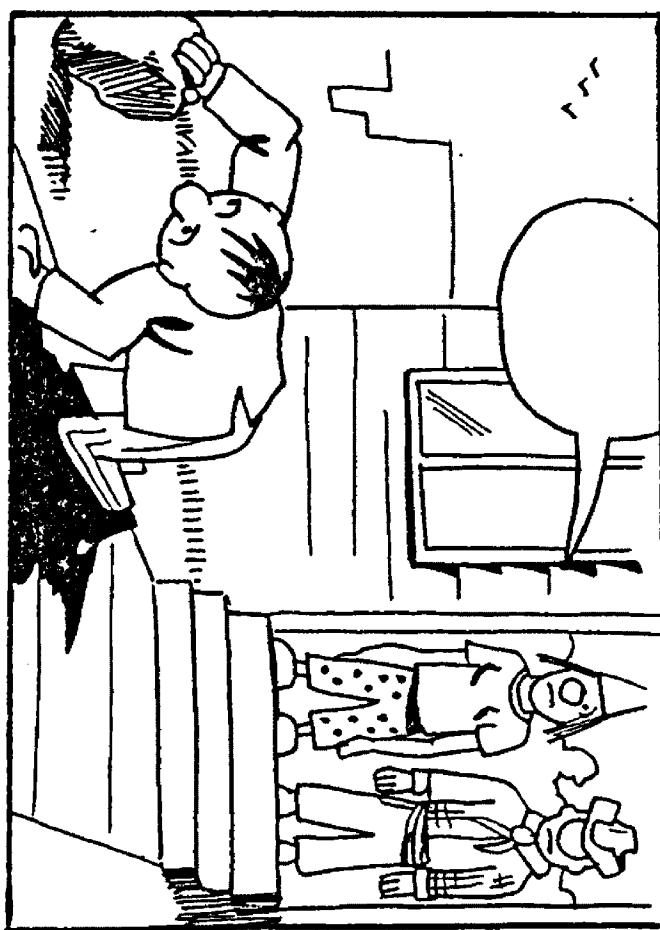
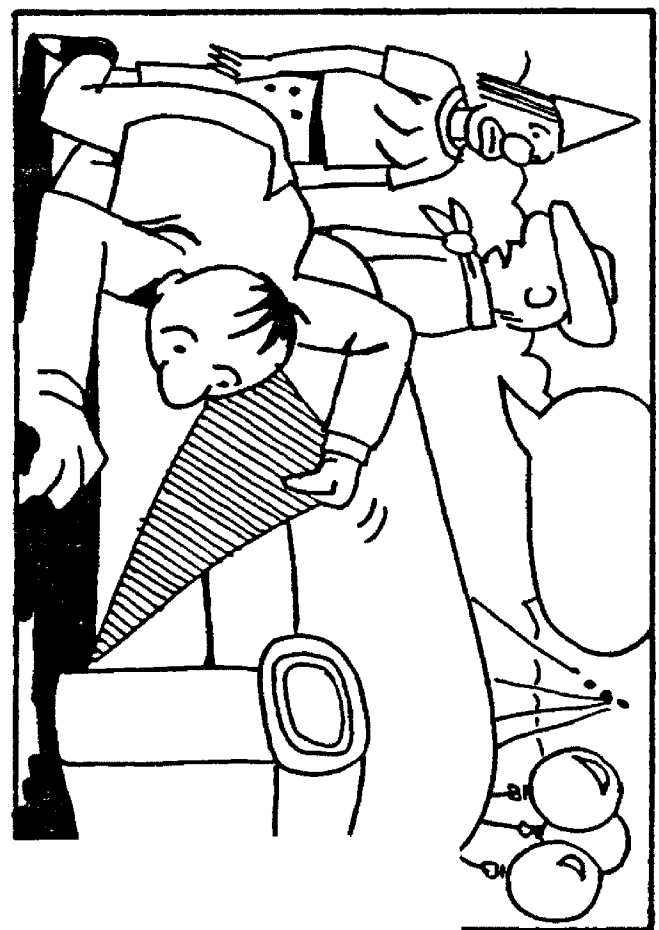
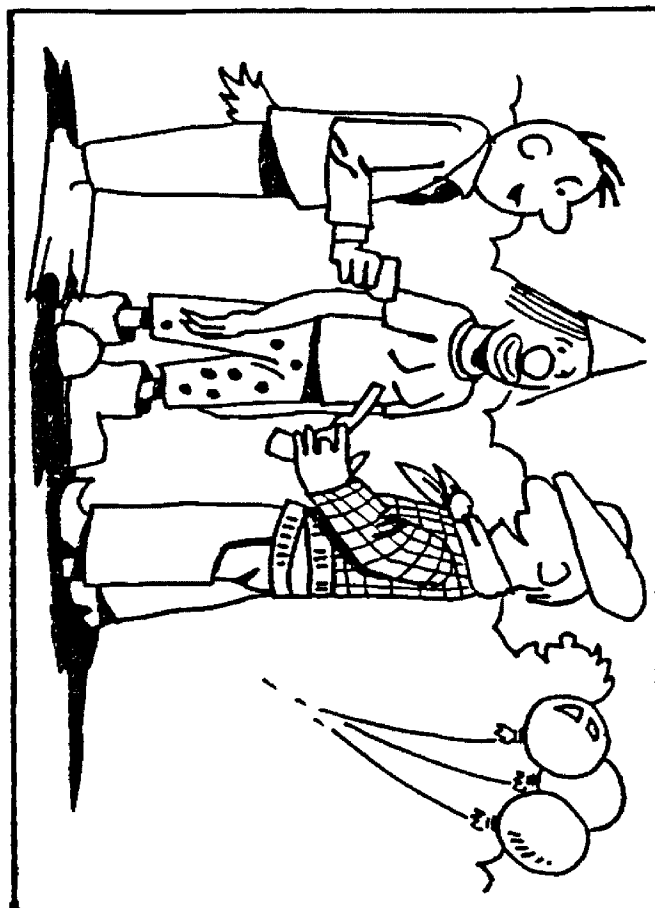
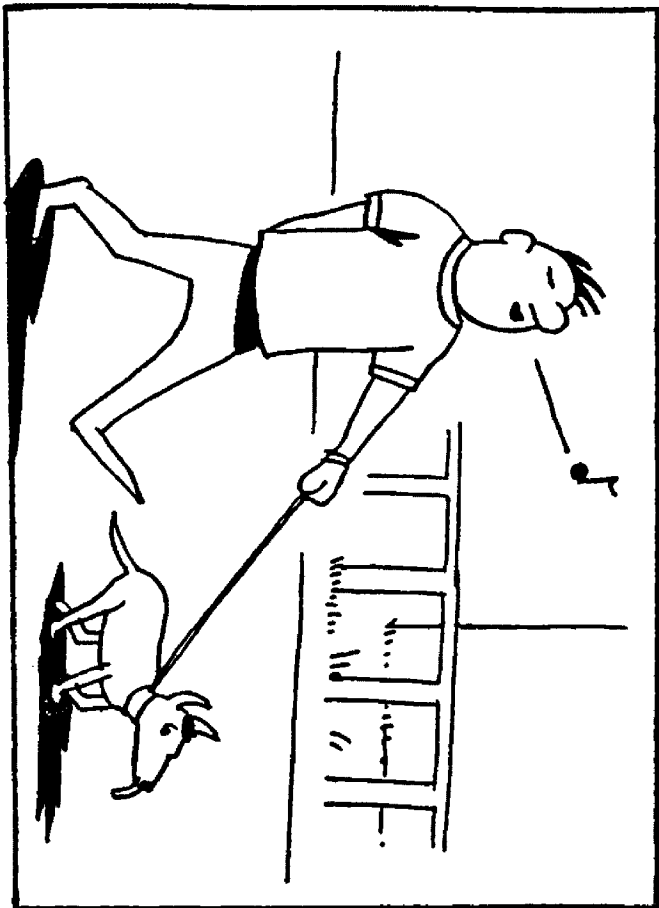


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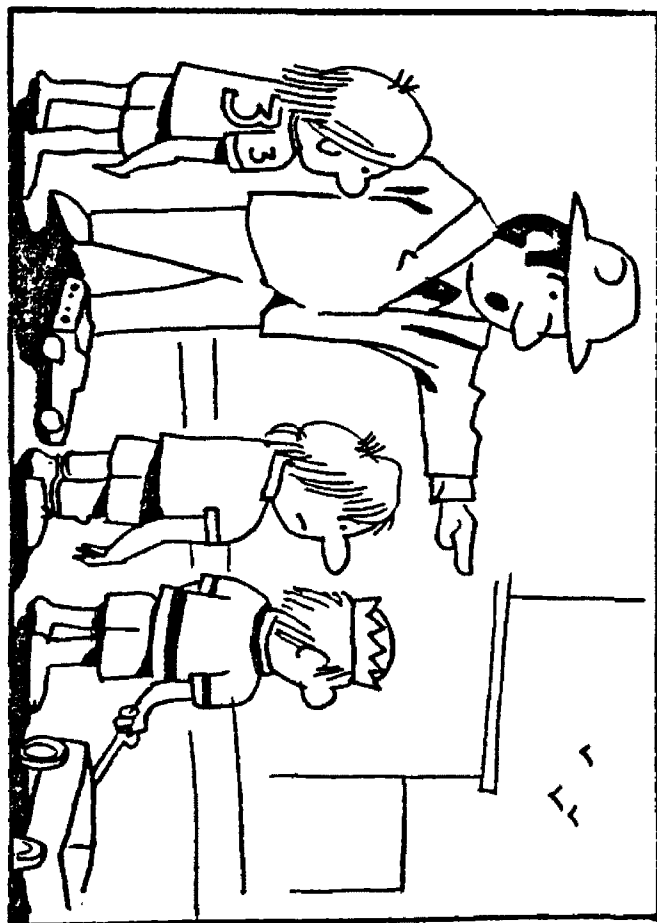
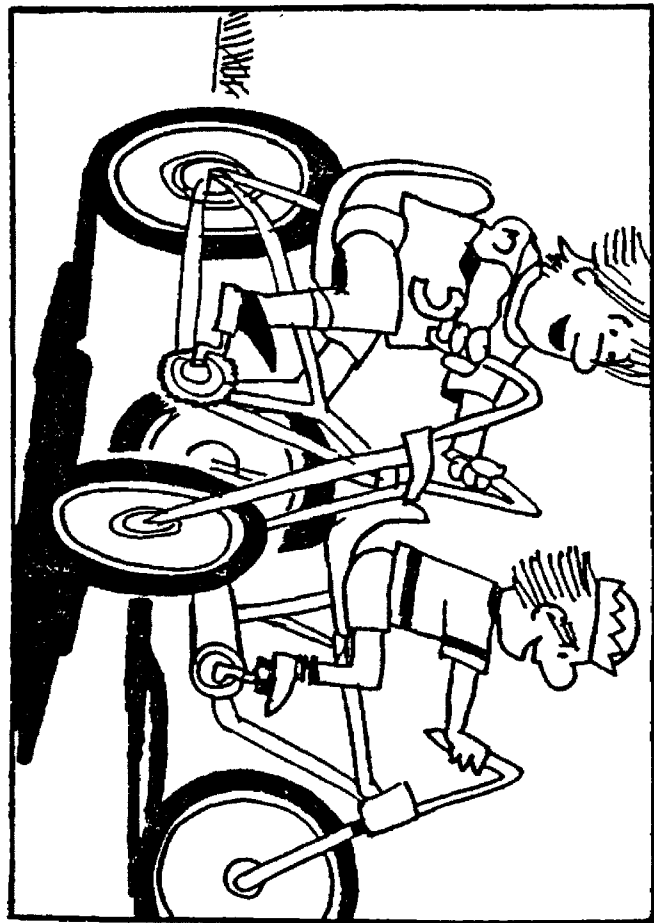
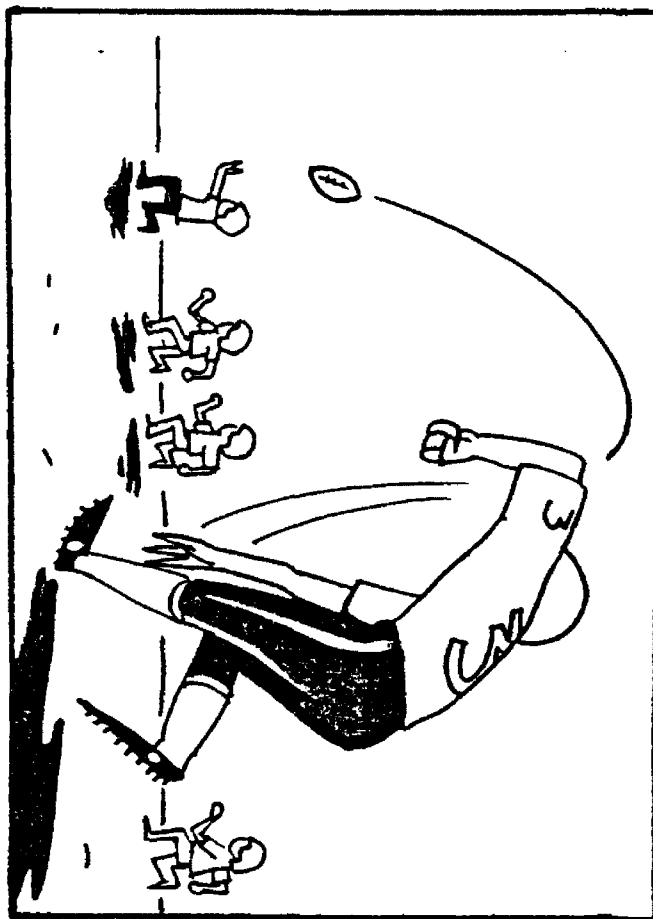
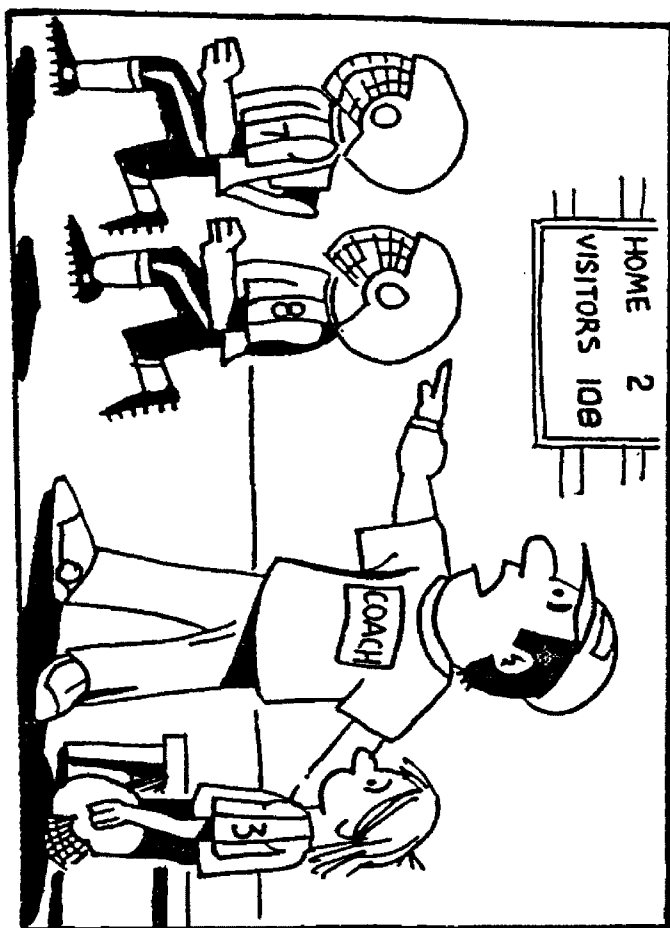


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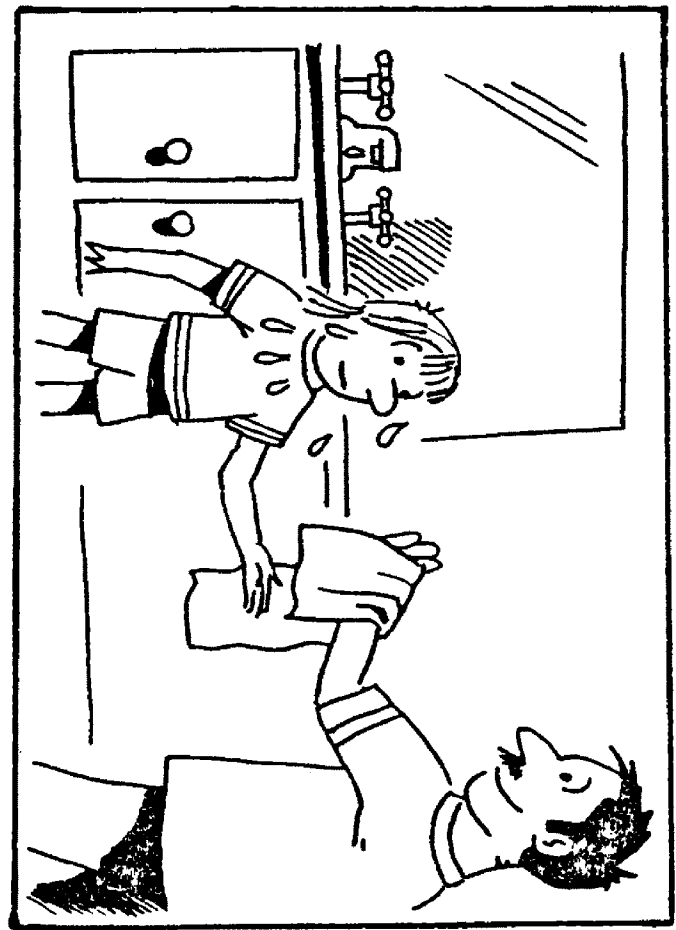
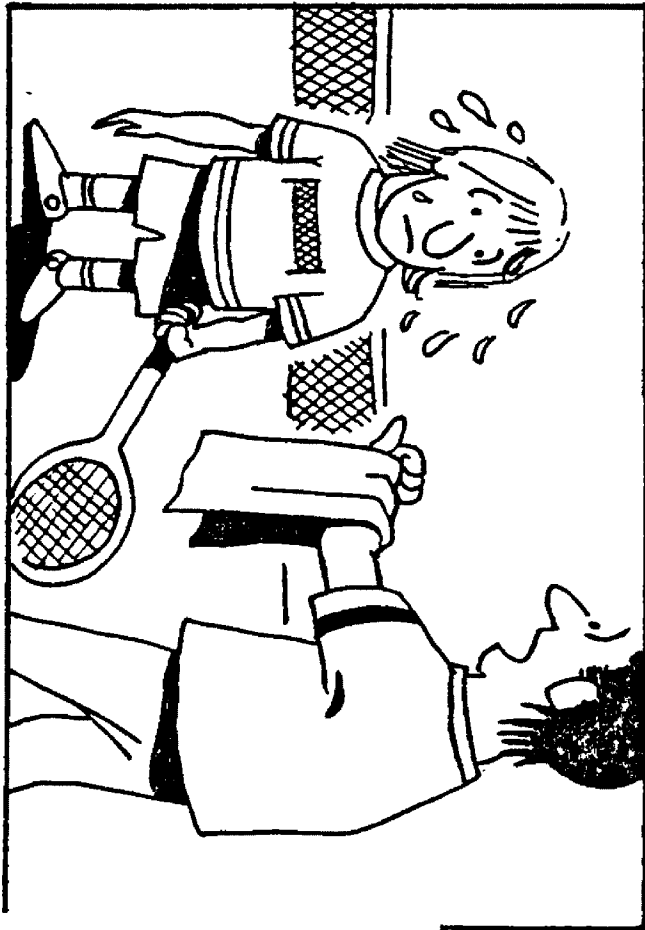
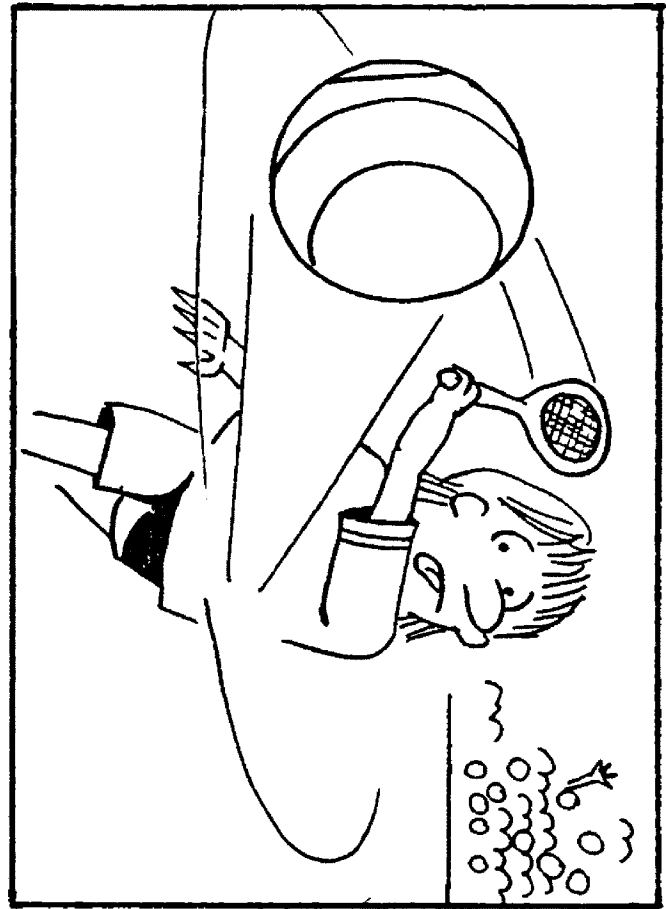
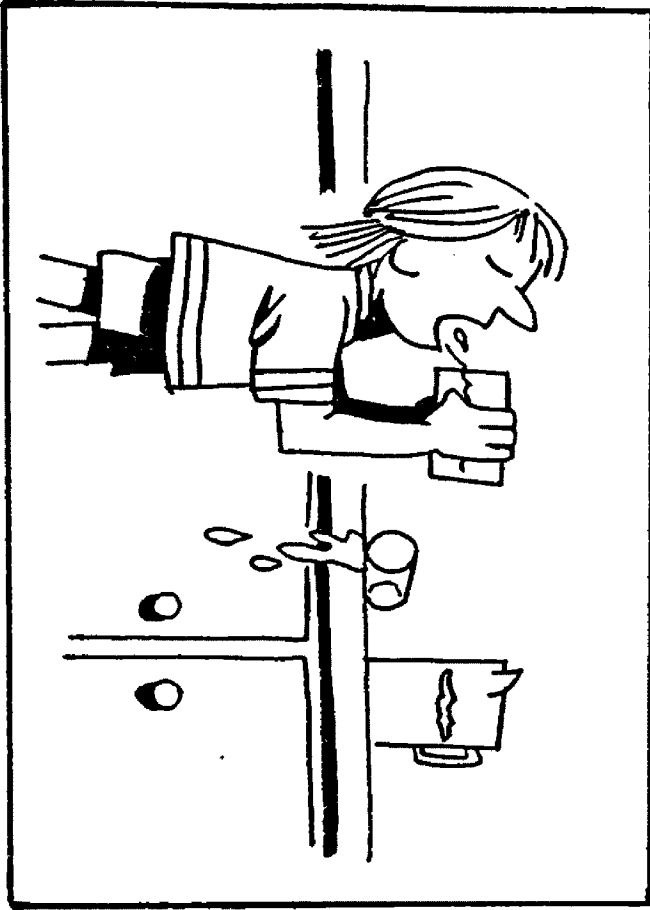


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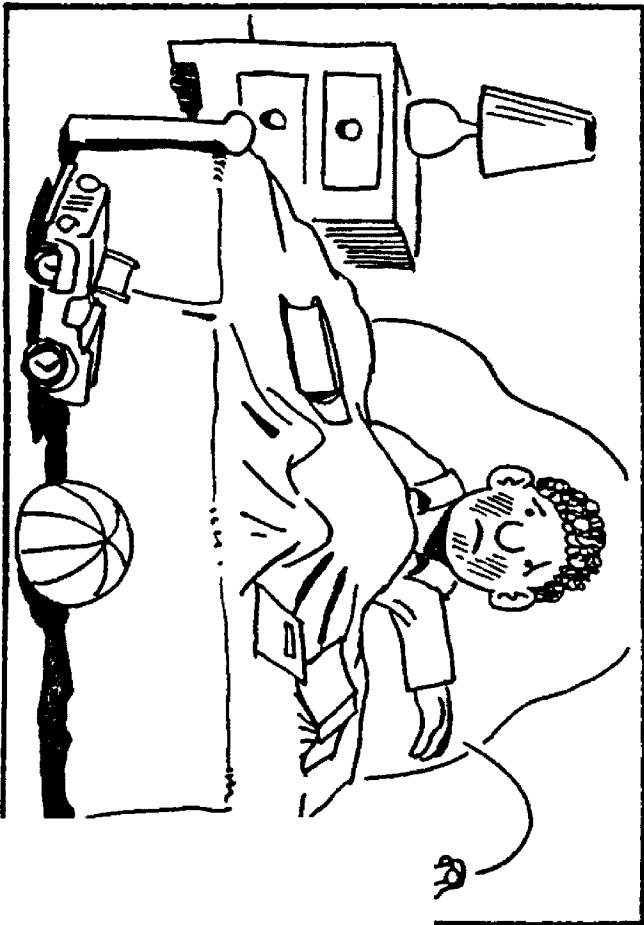
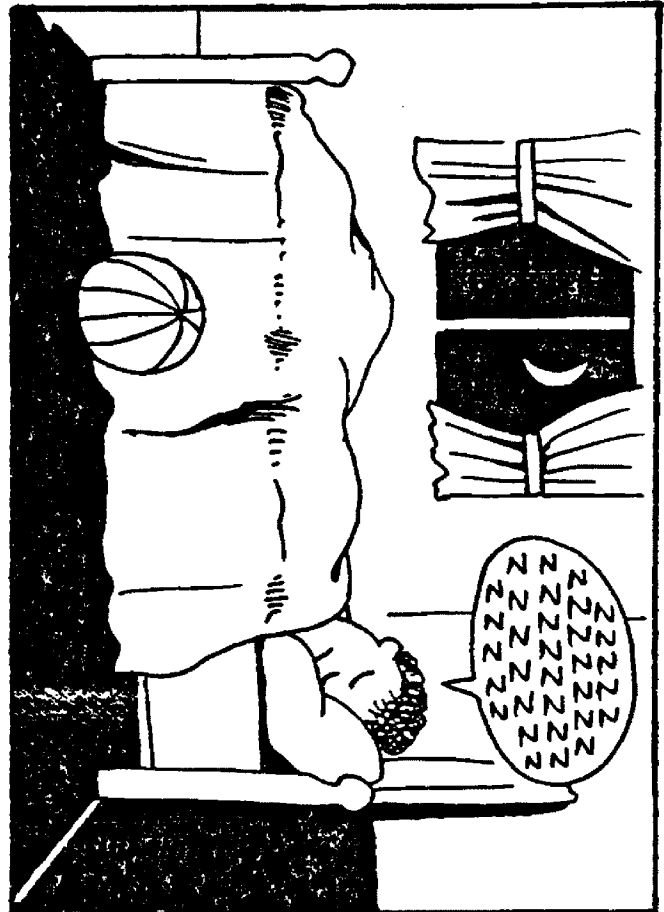
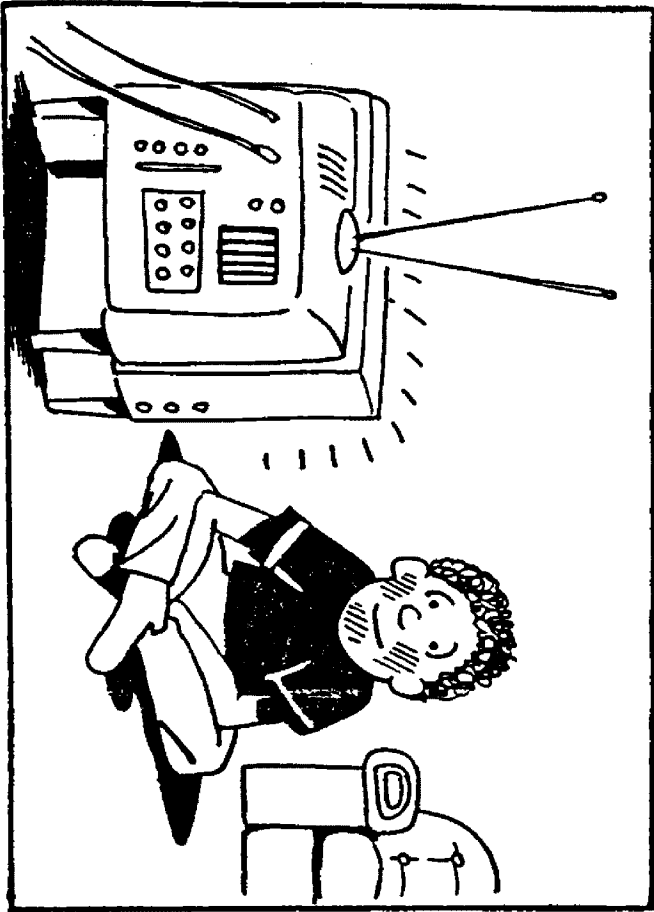


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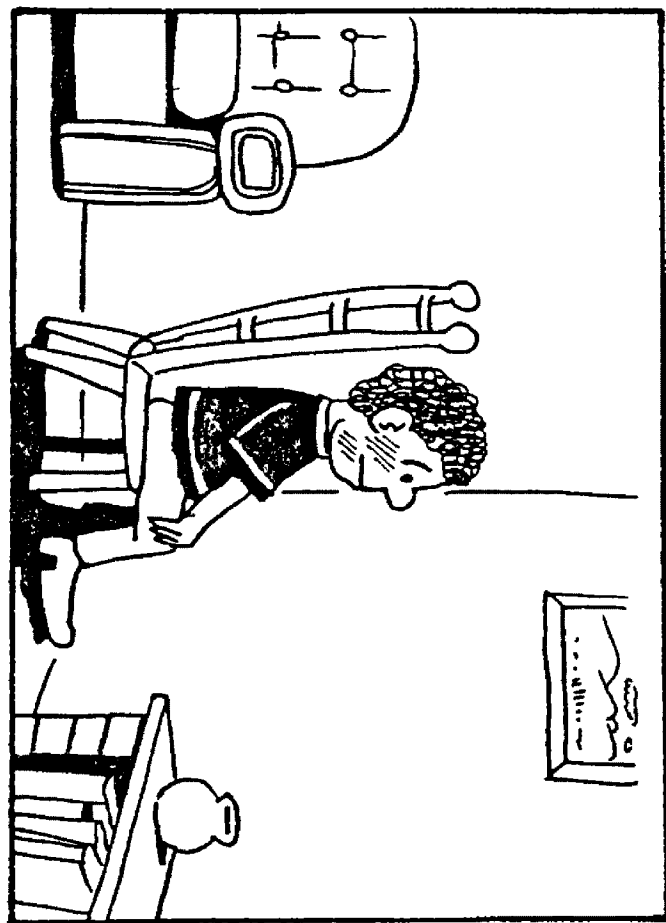
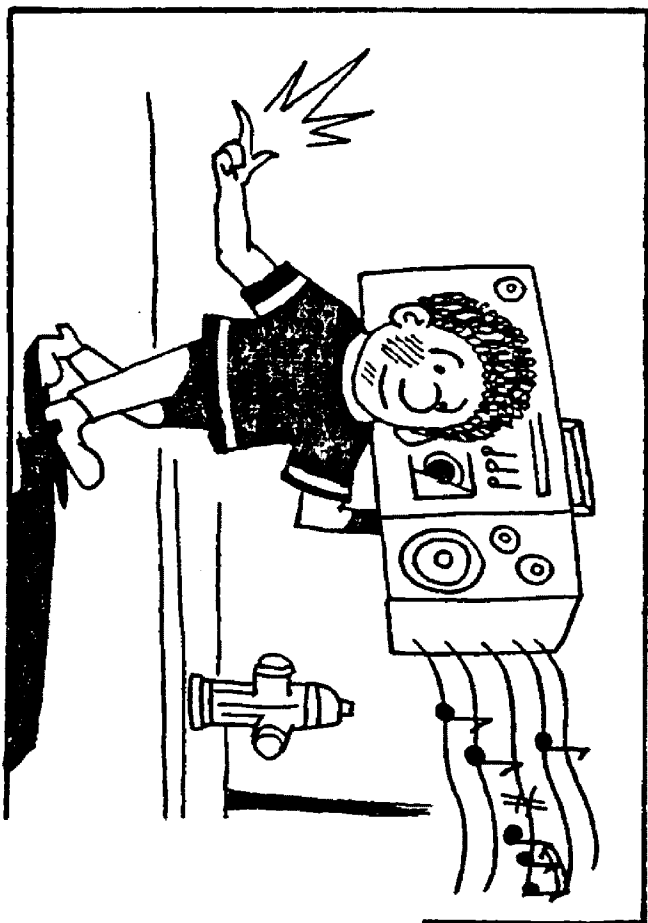
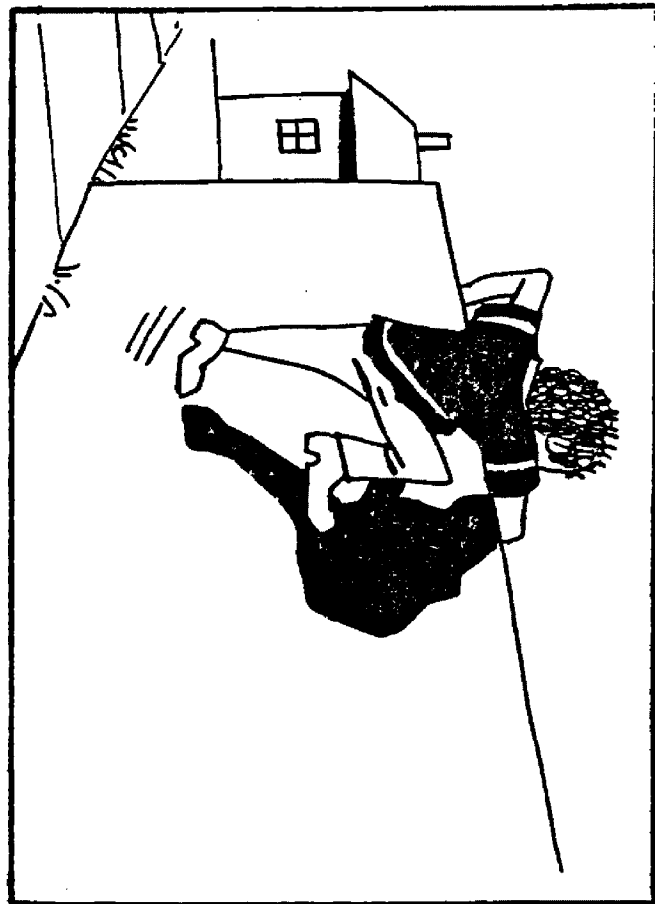
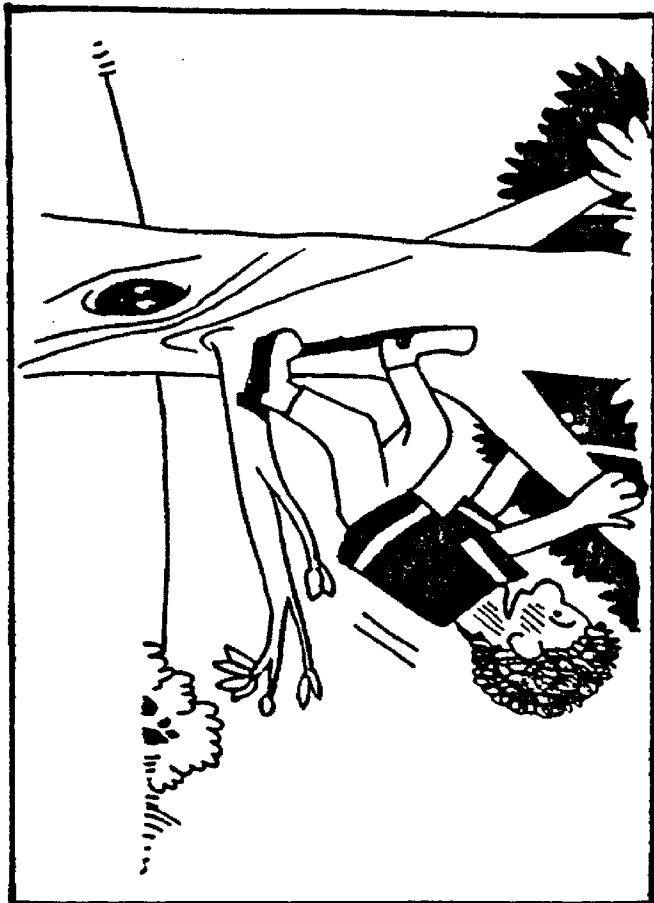


Plate 6

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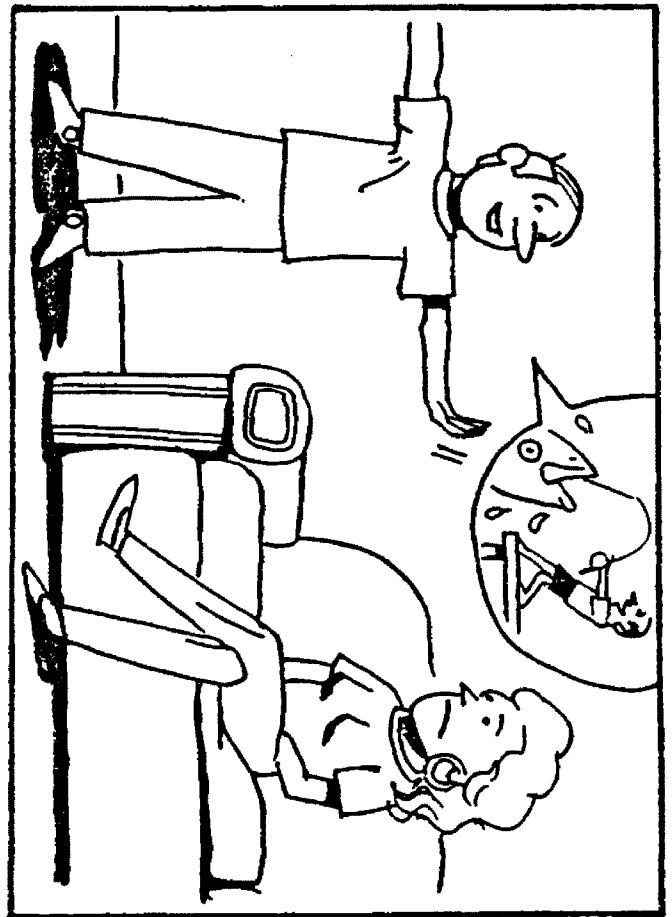
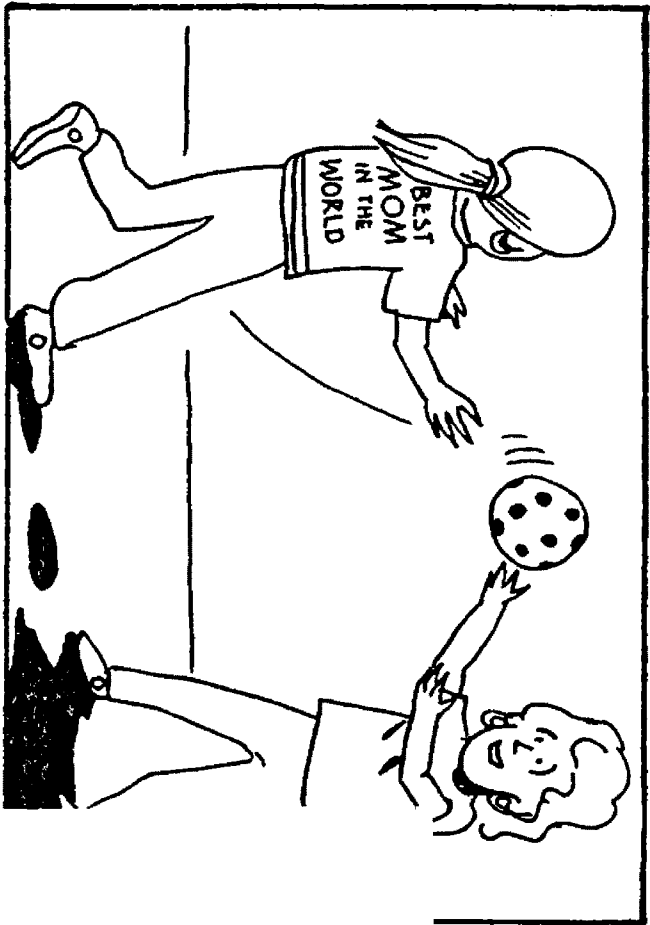
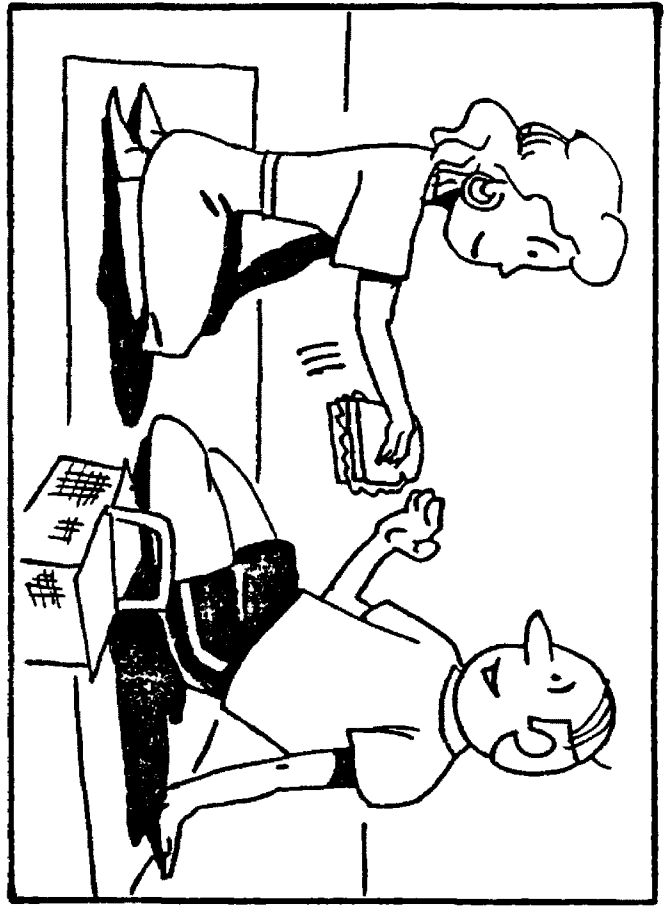
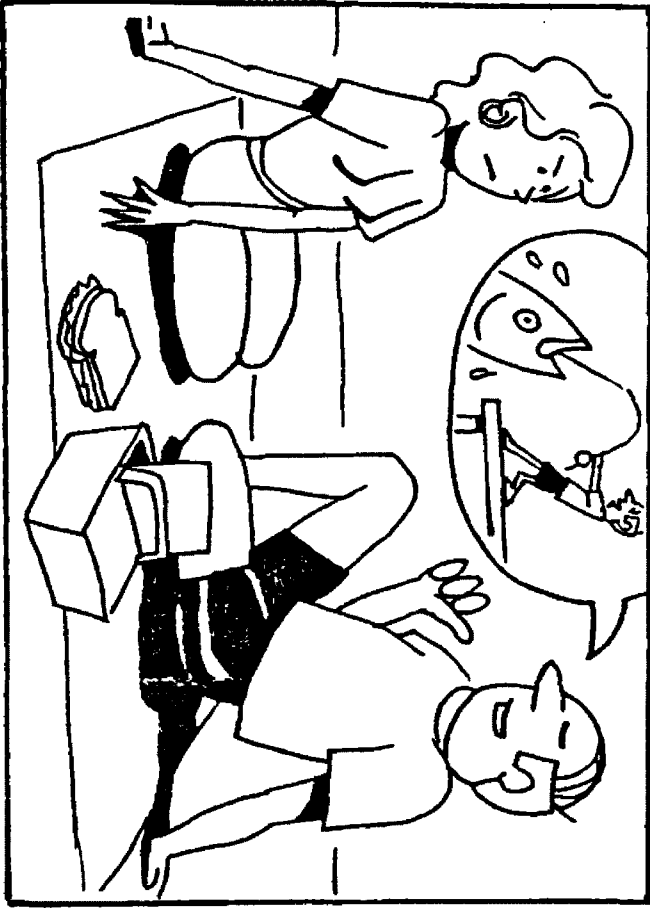


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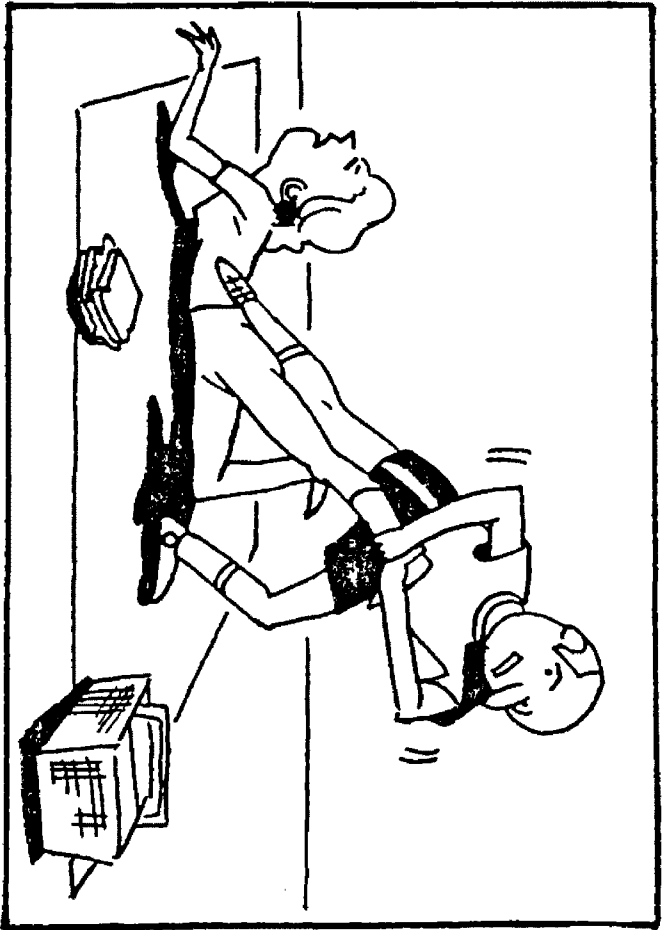
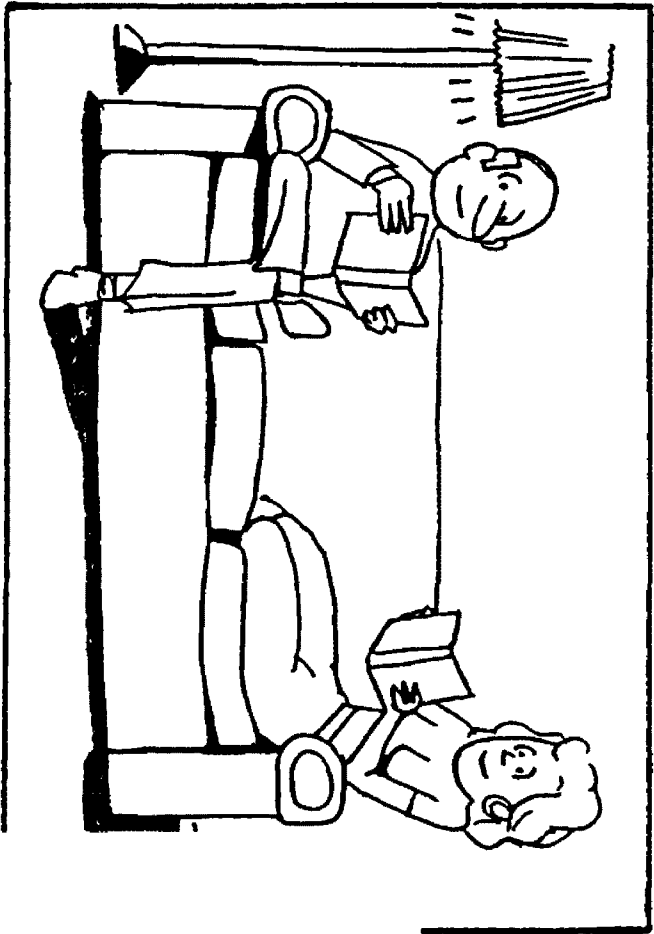
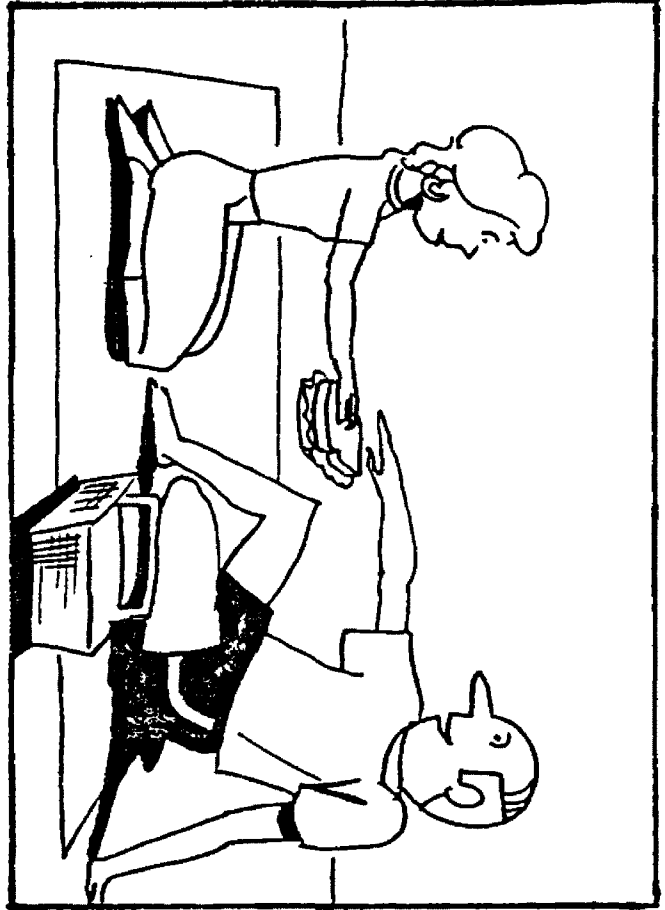
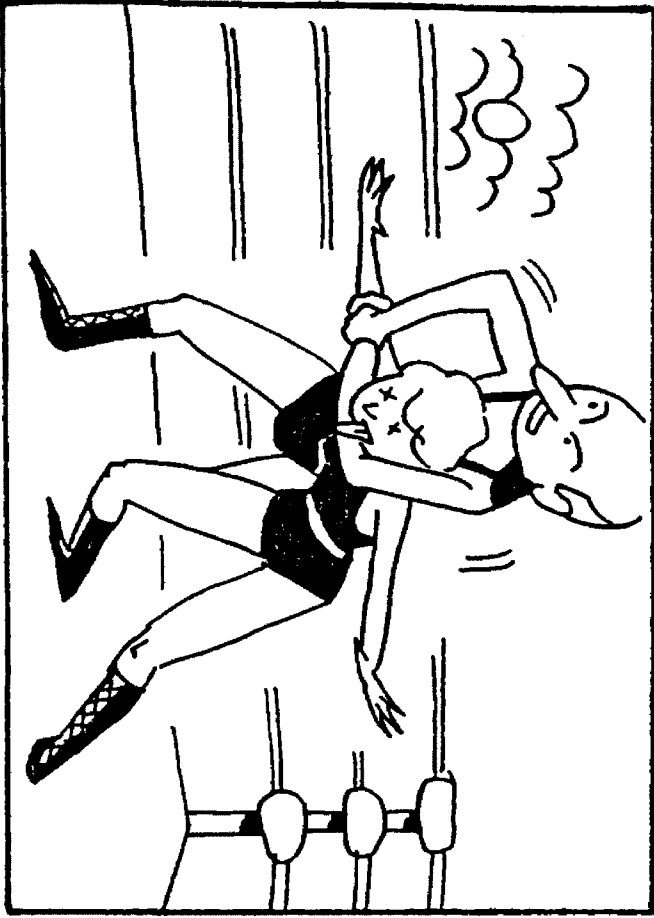


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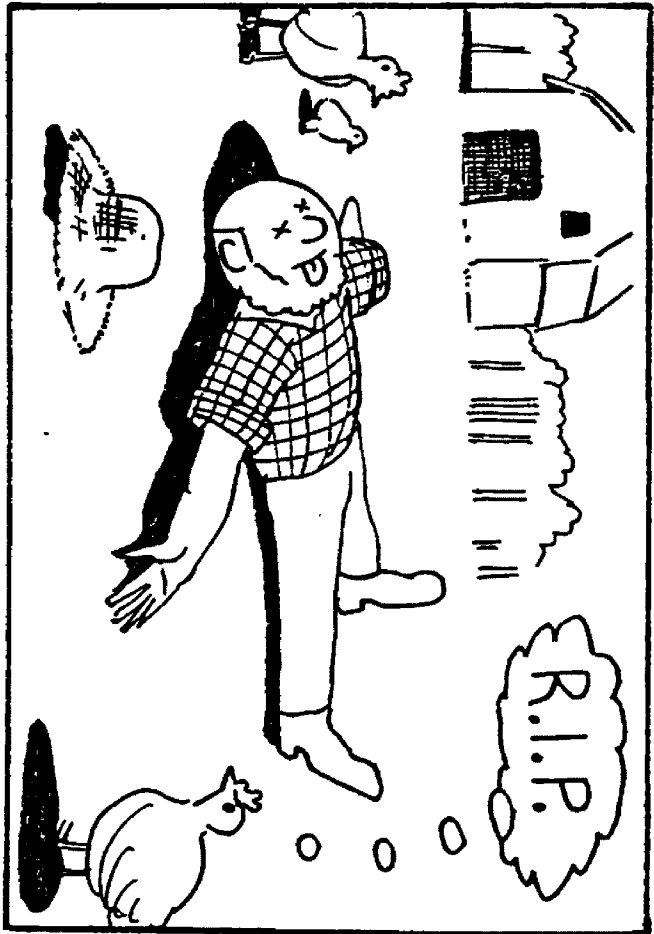
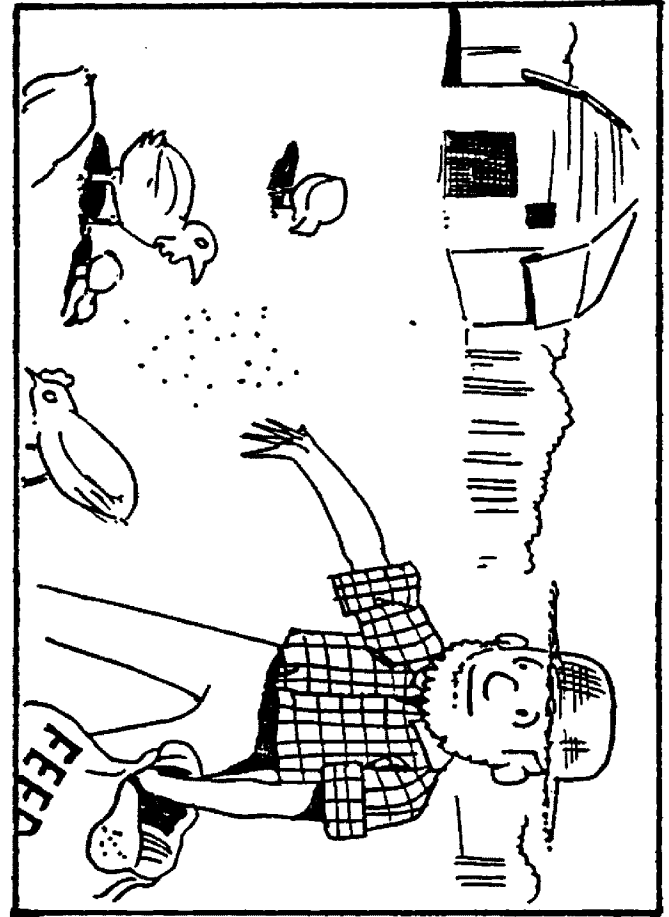
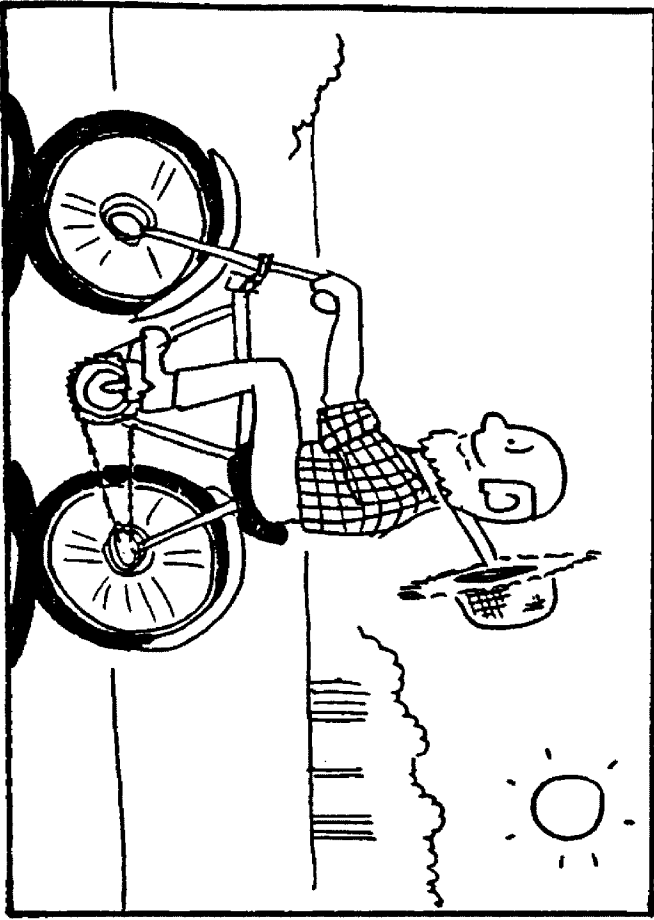


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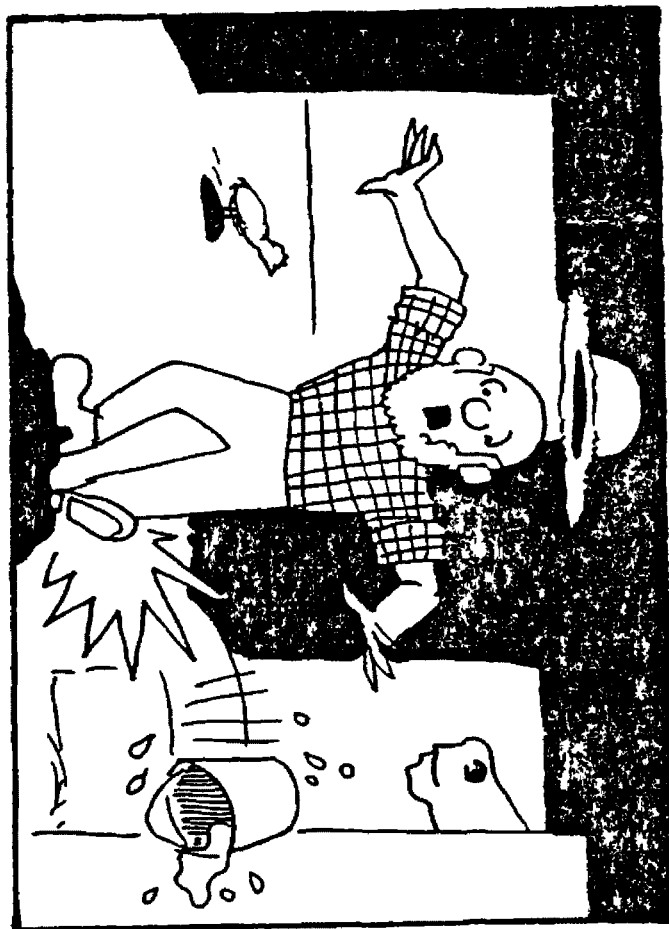
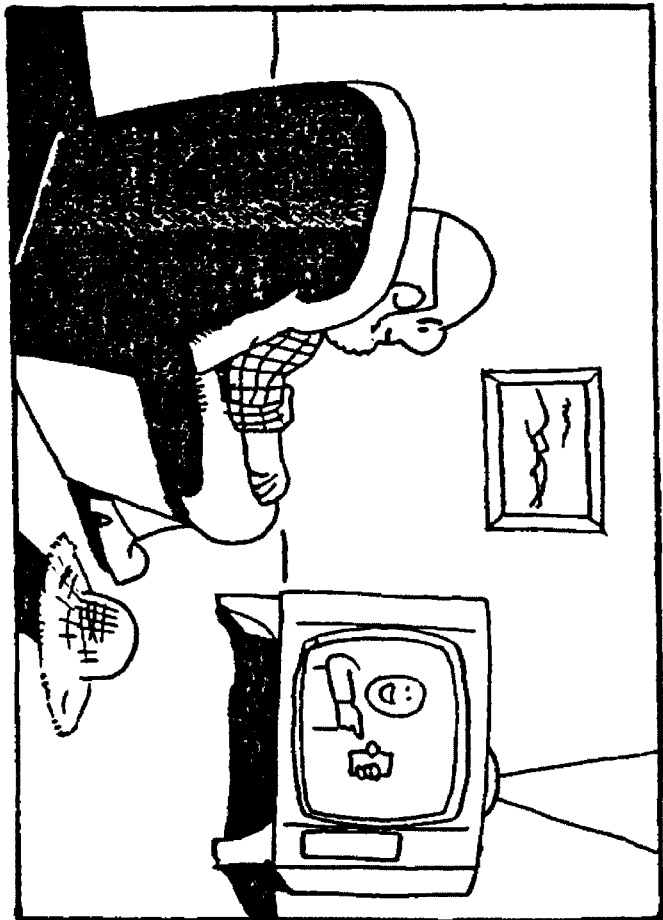
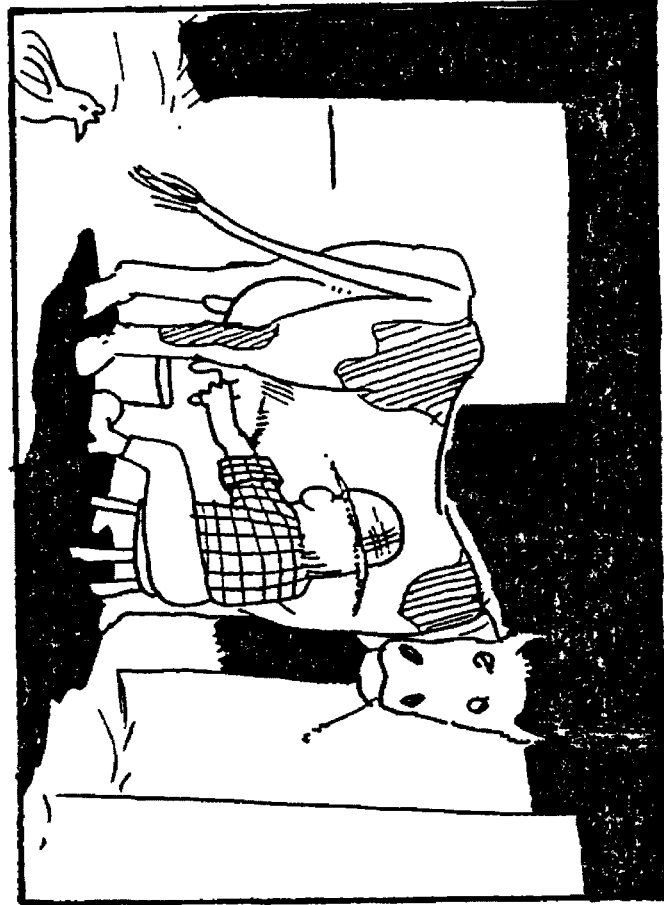
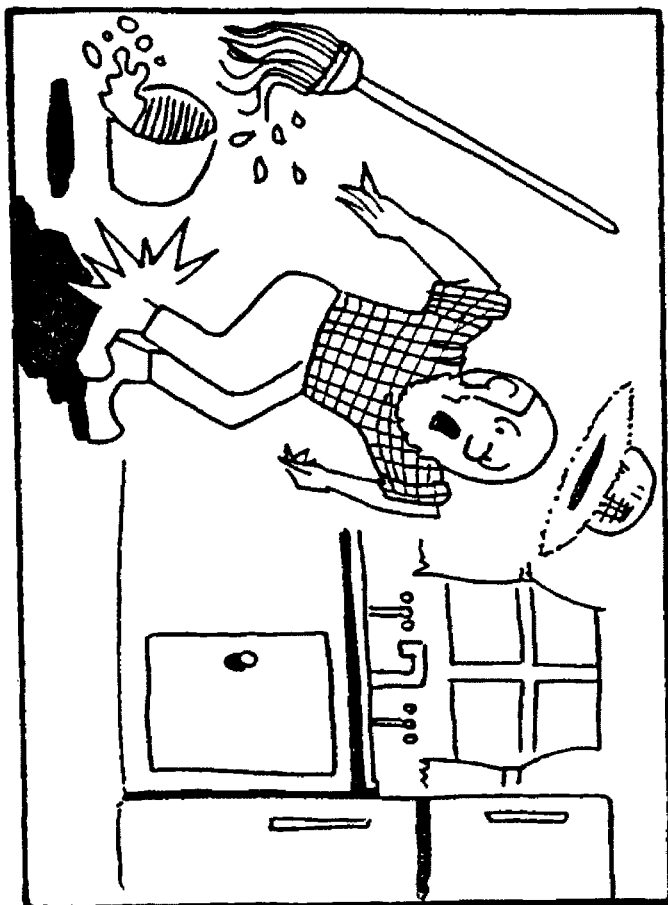


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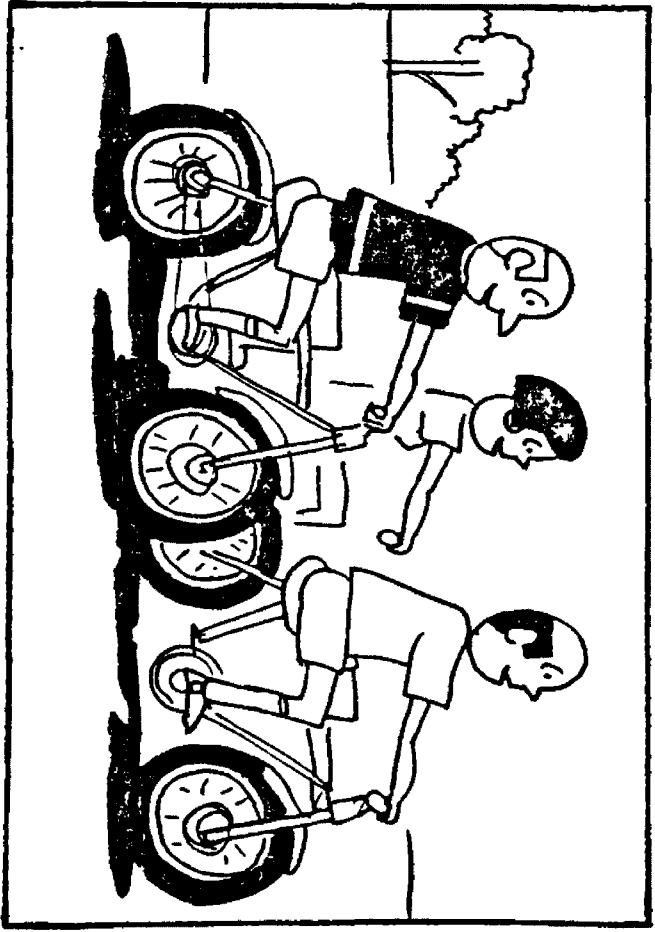
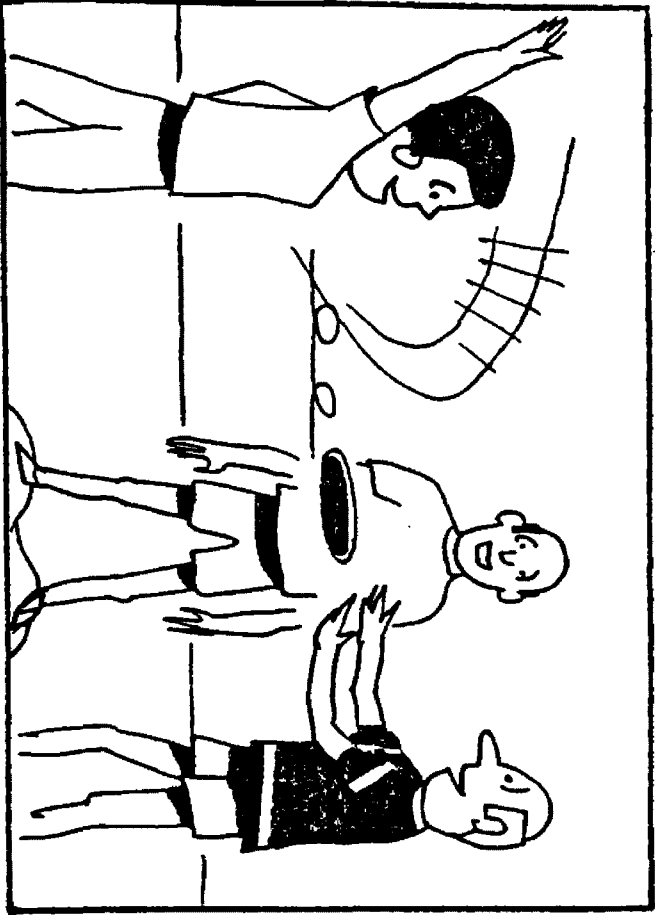
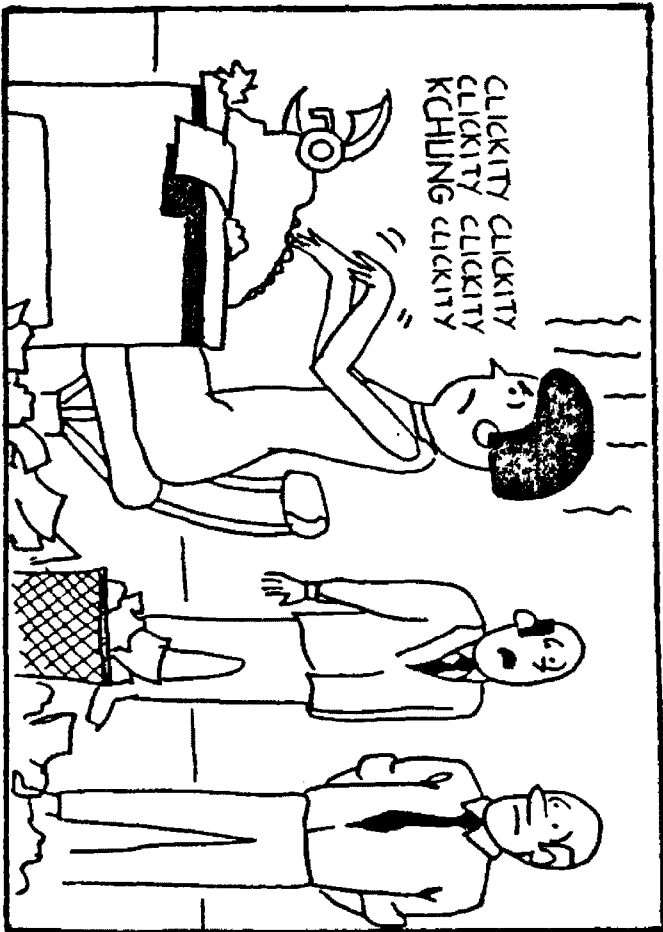
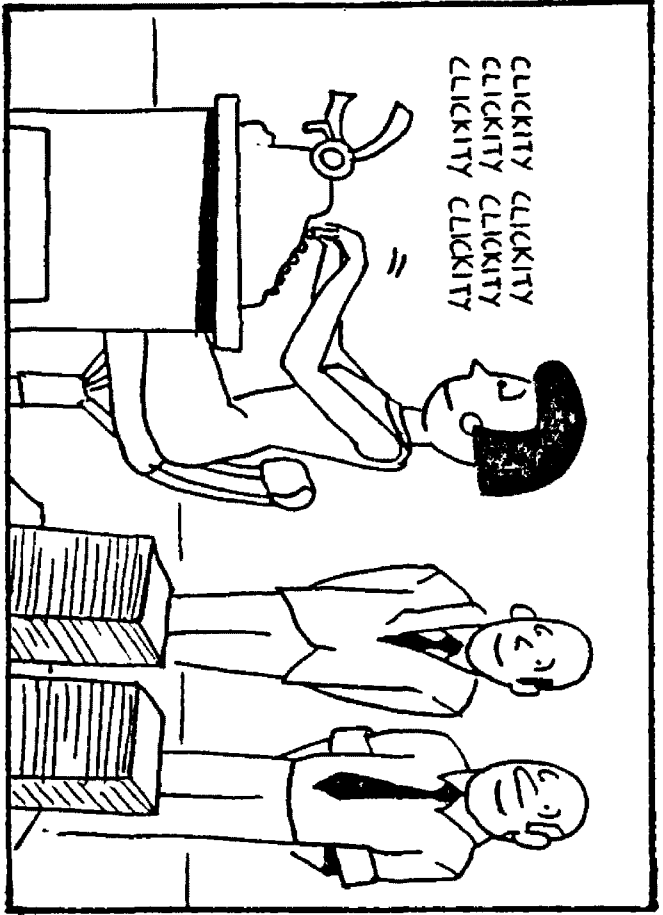


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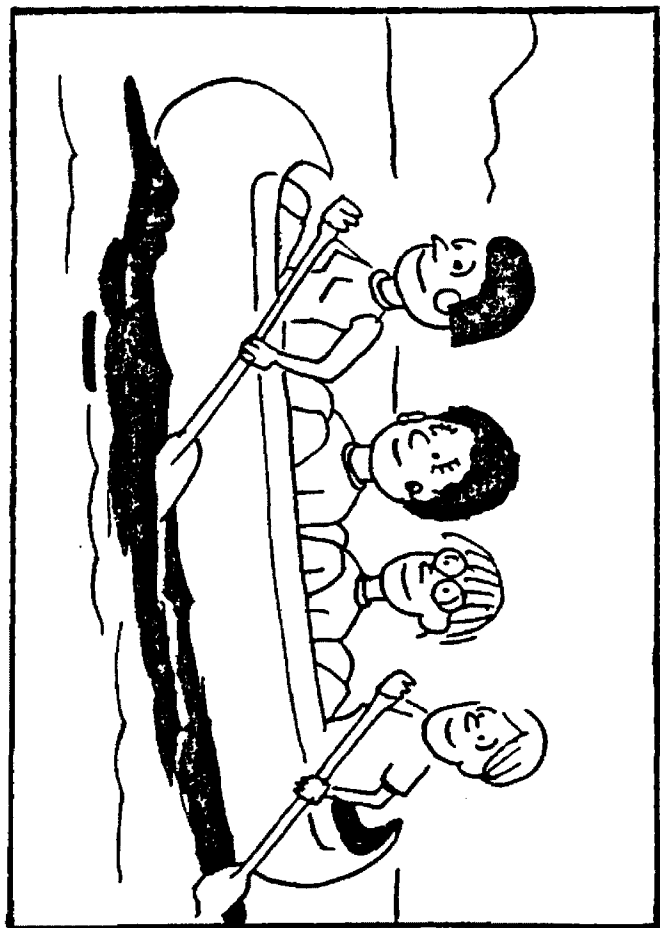
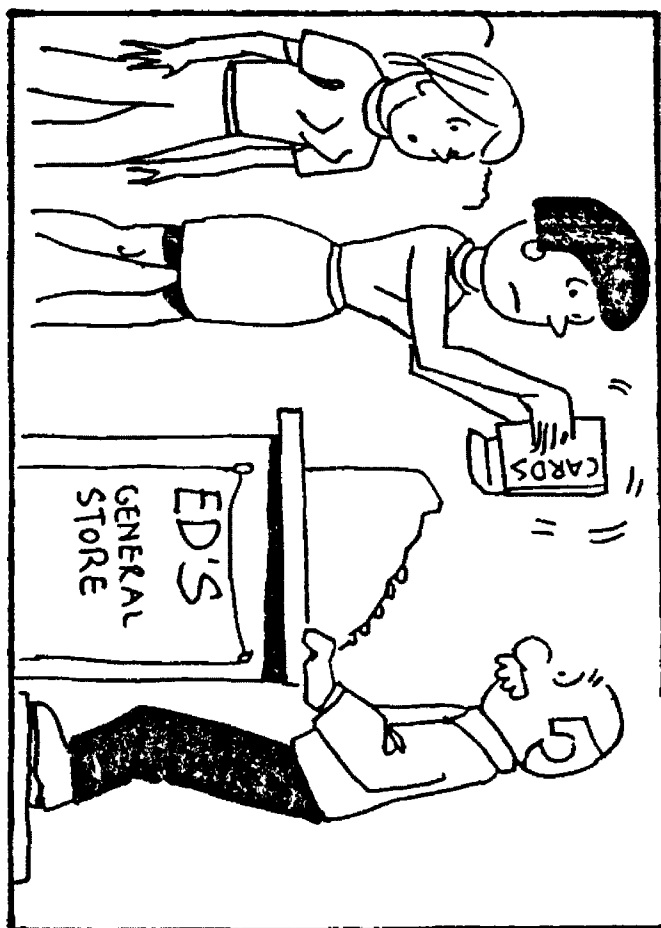
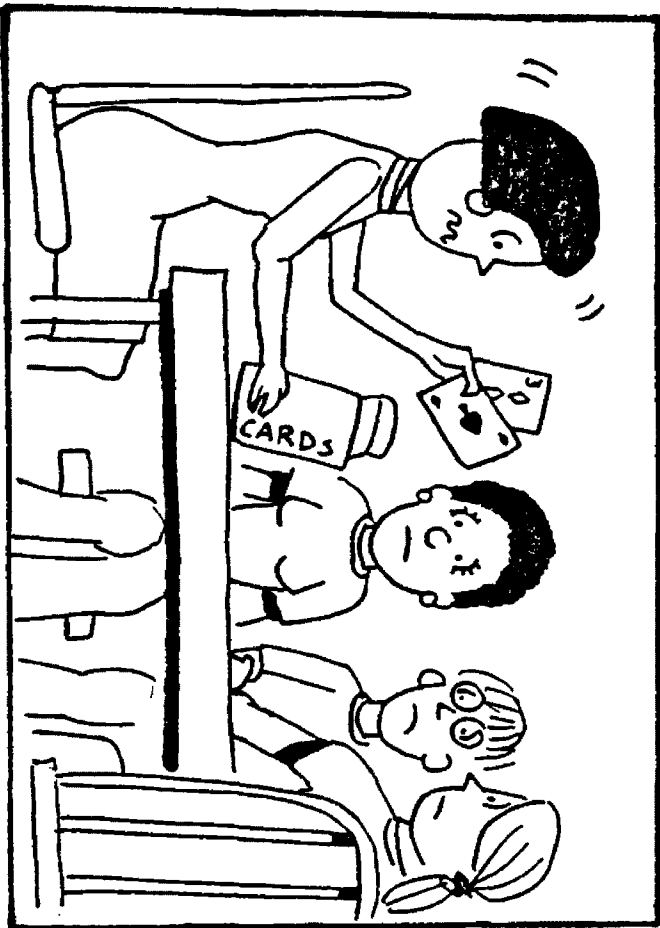


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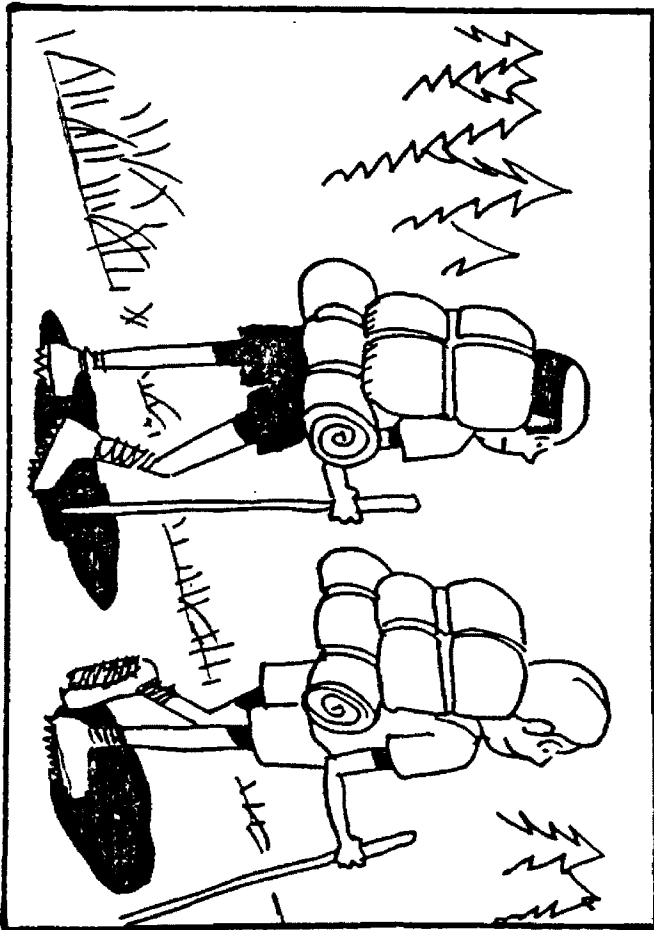
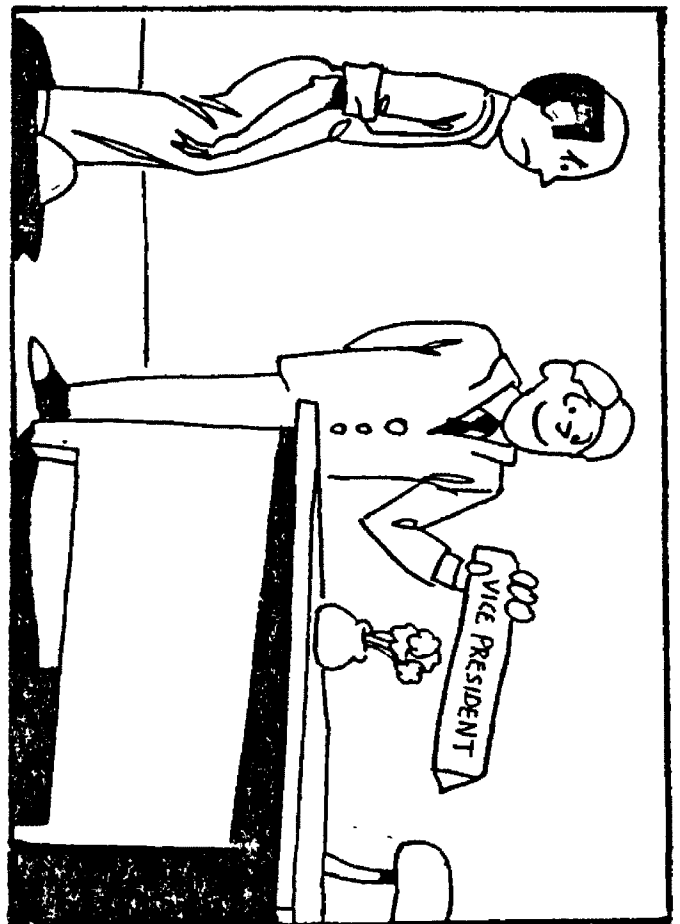
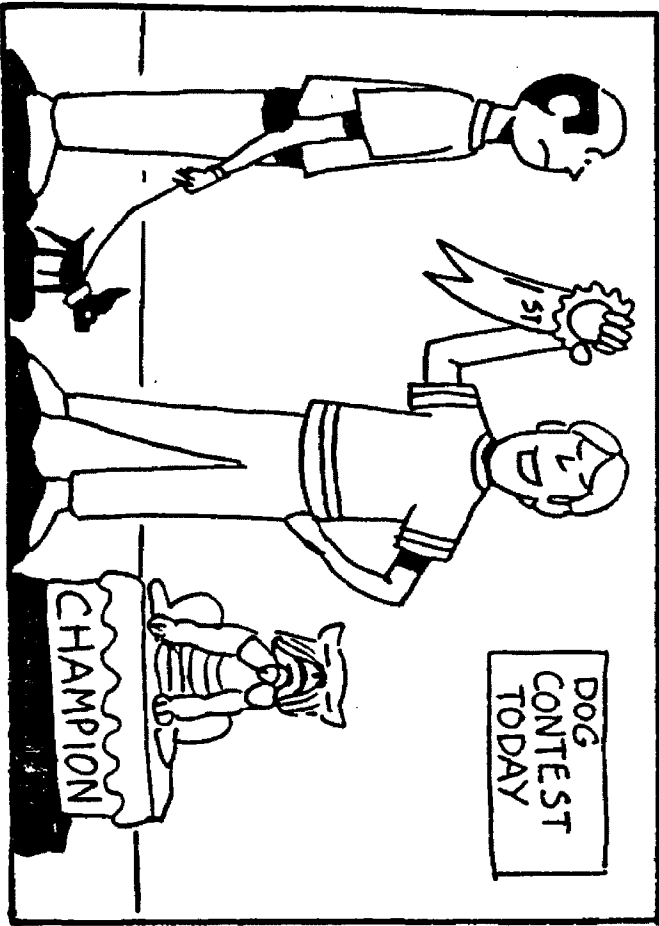
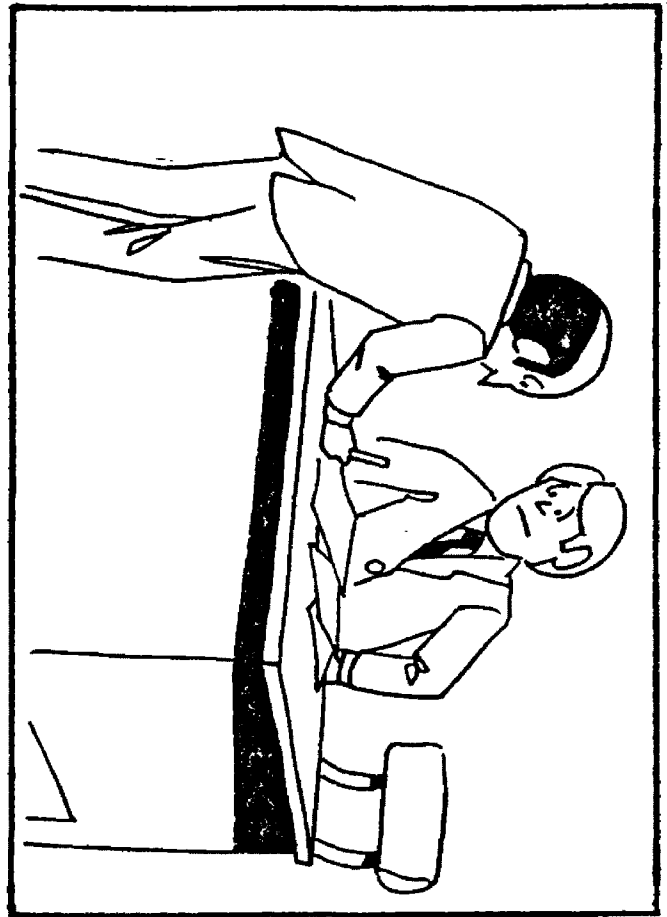


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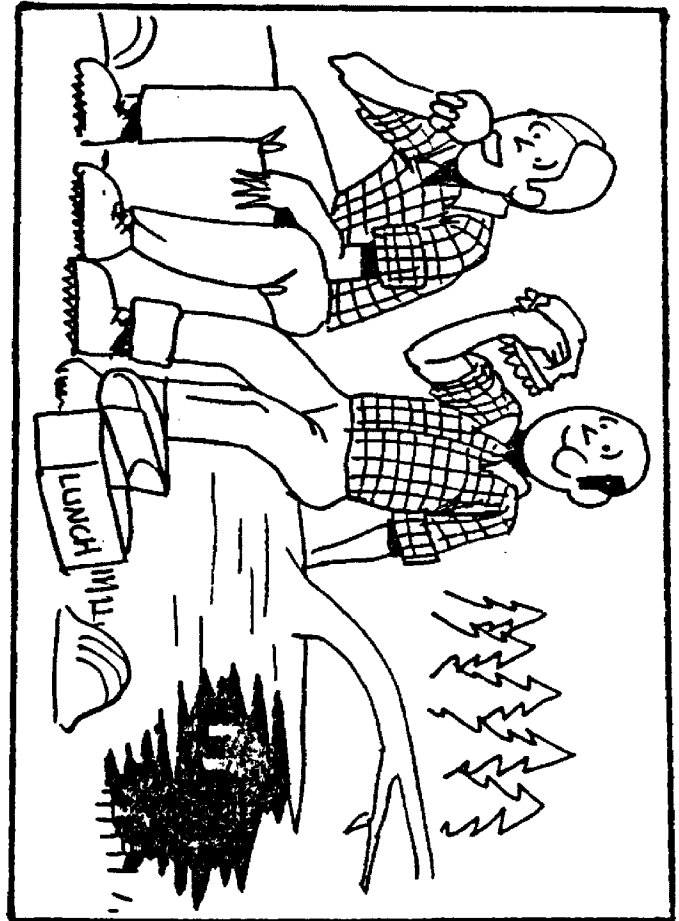
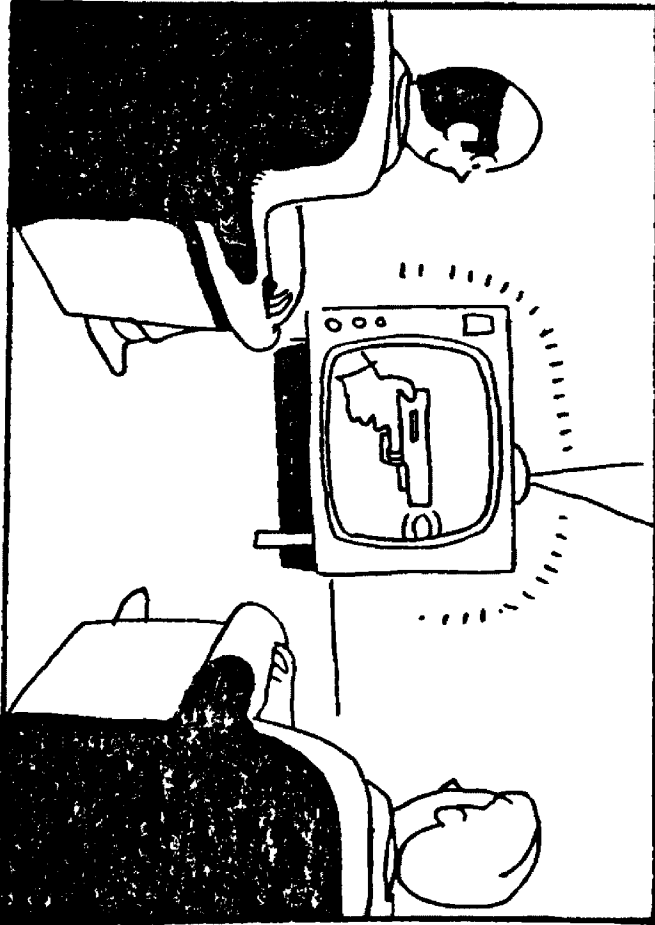
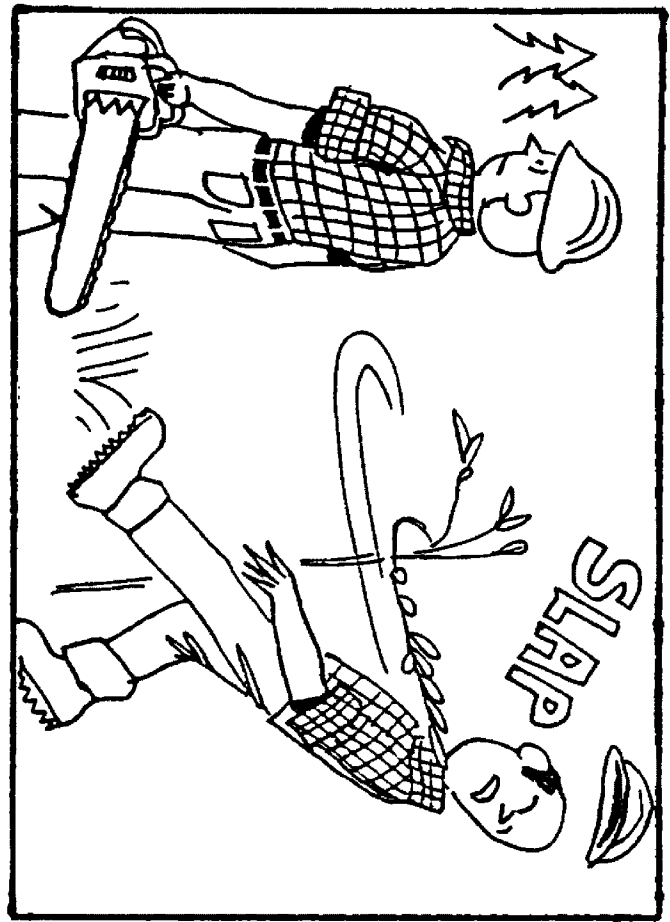
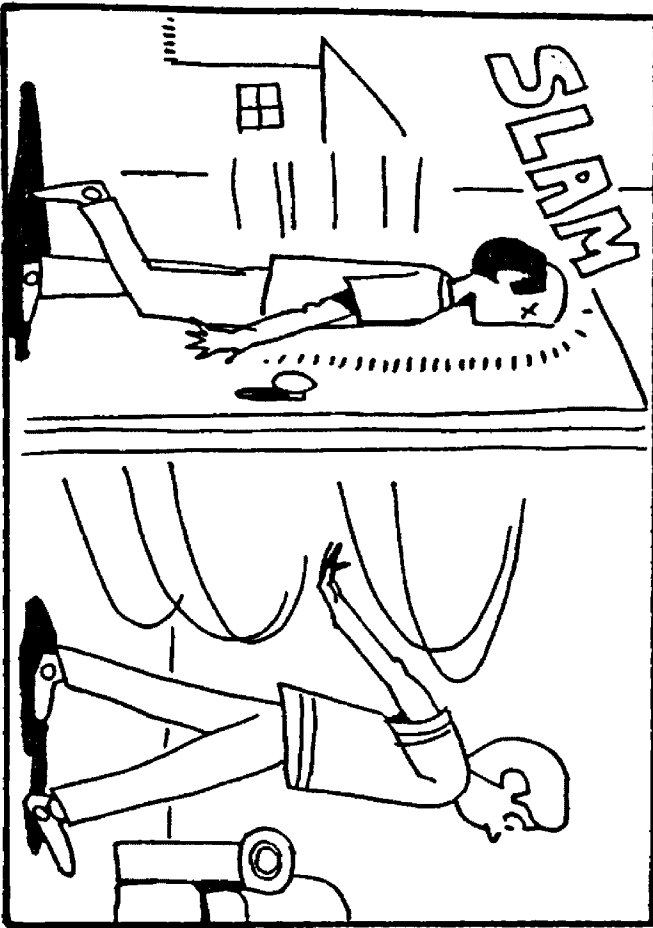


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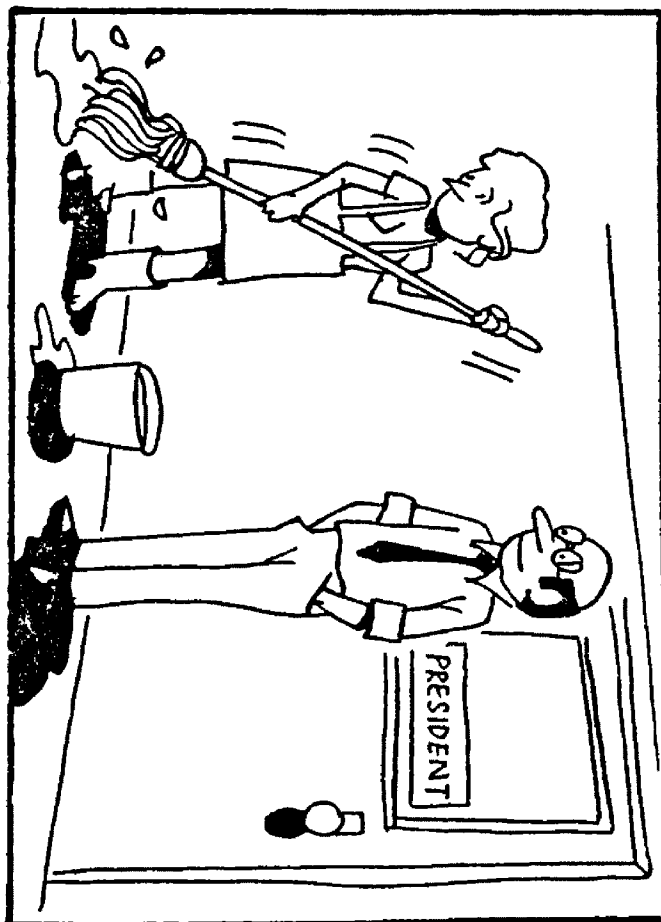
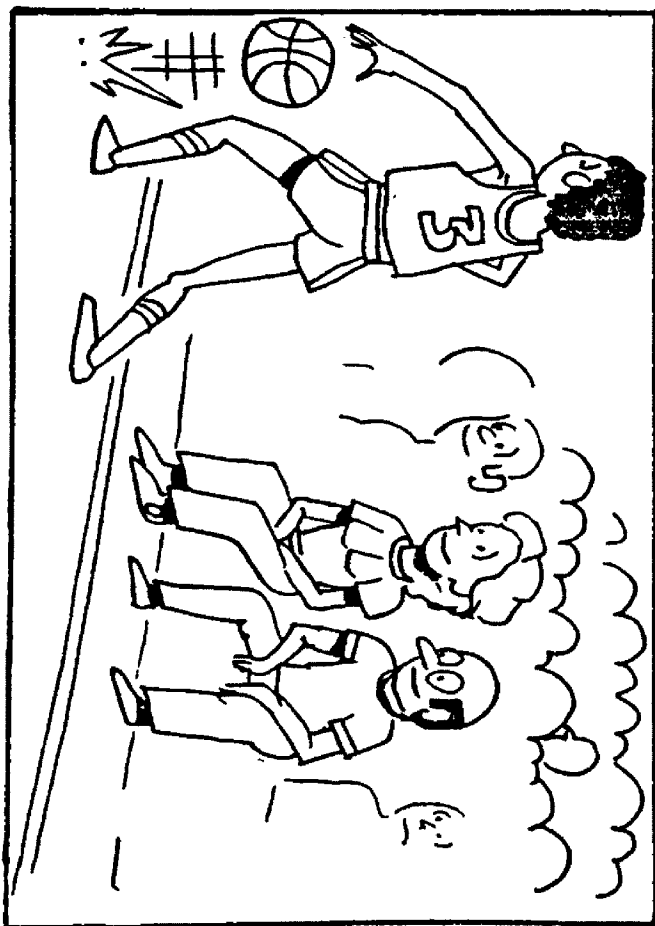
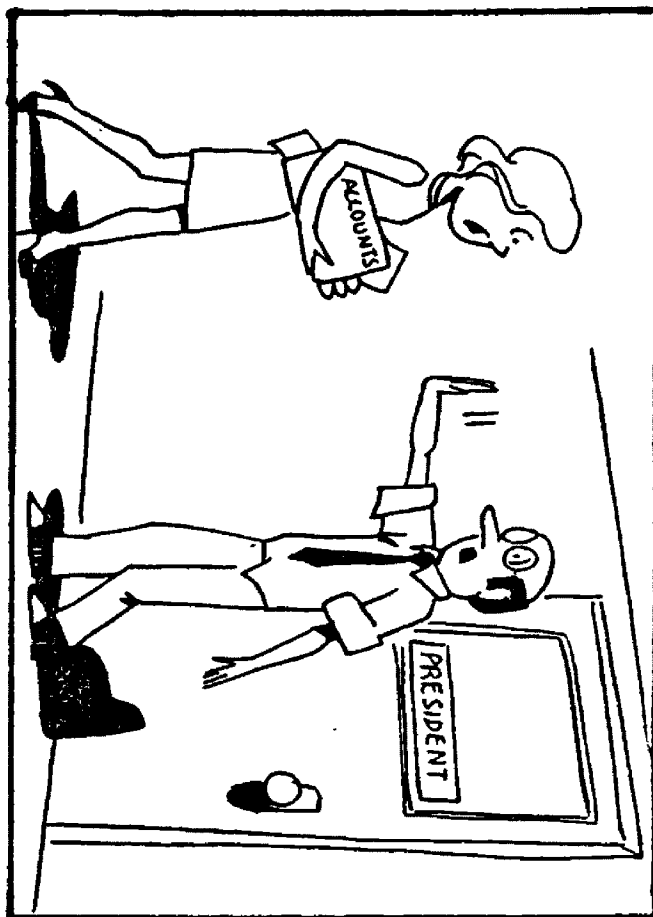
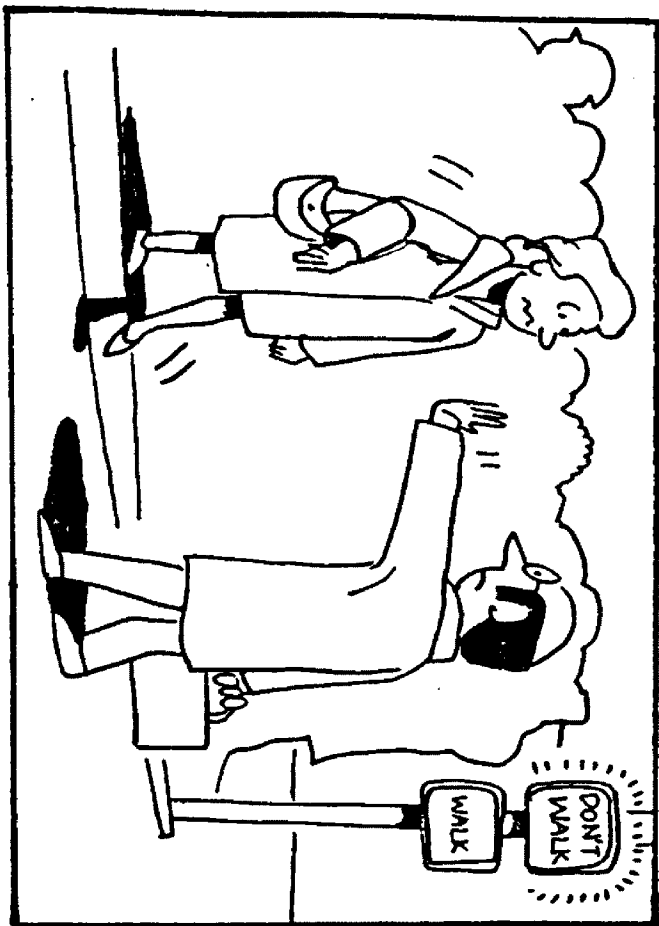


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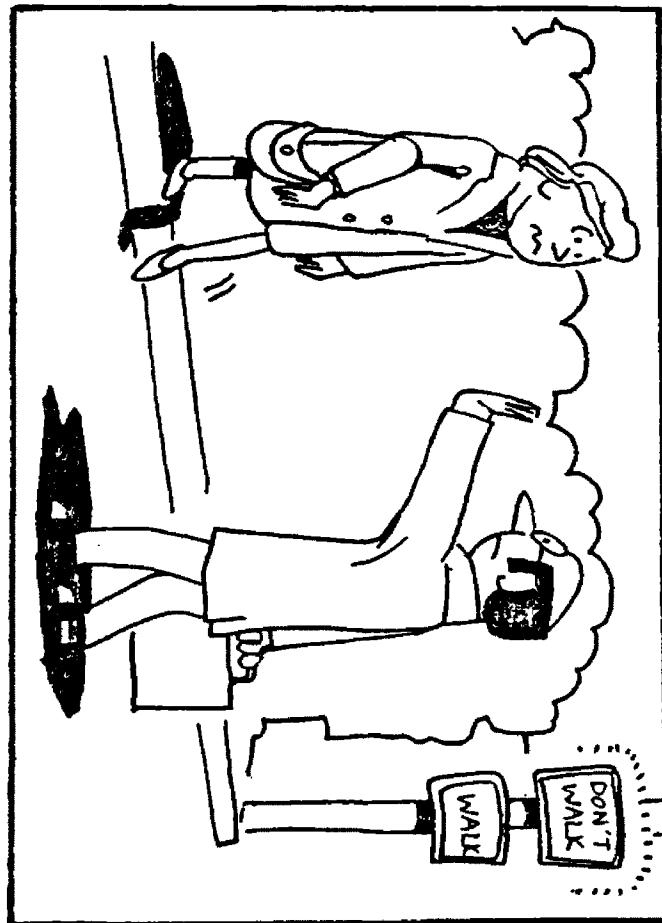
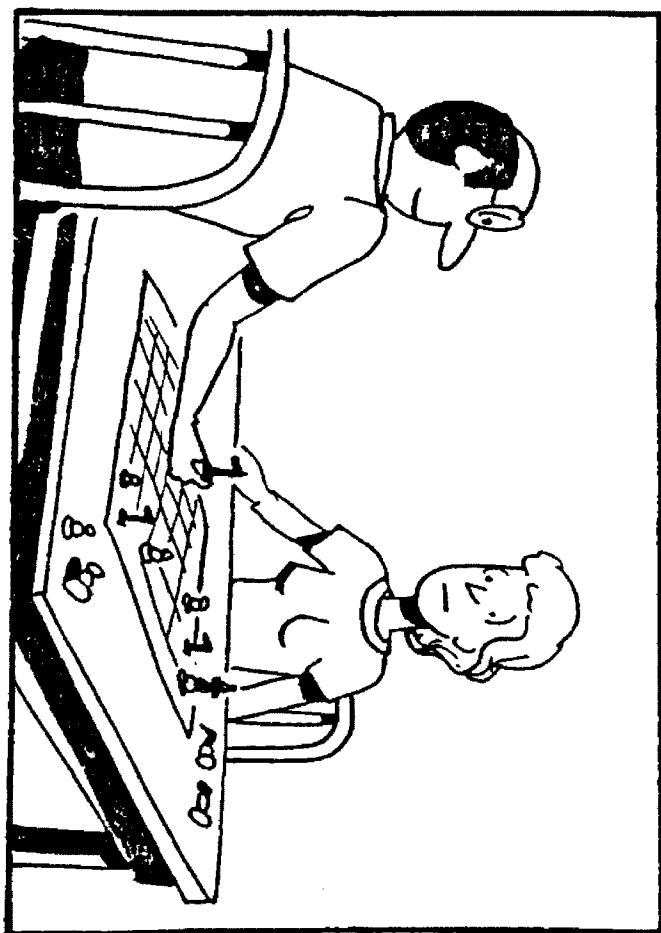
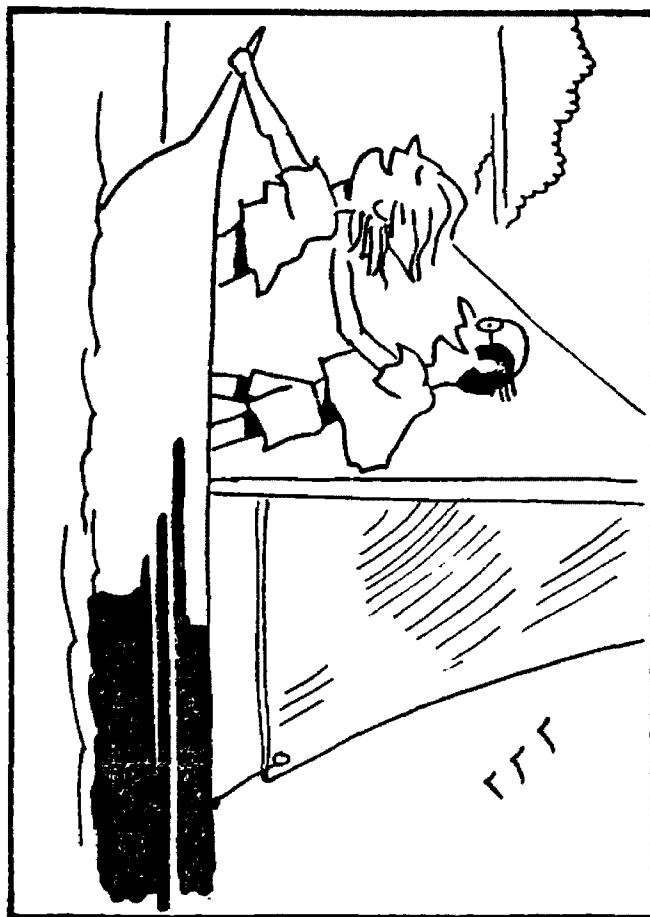
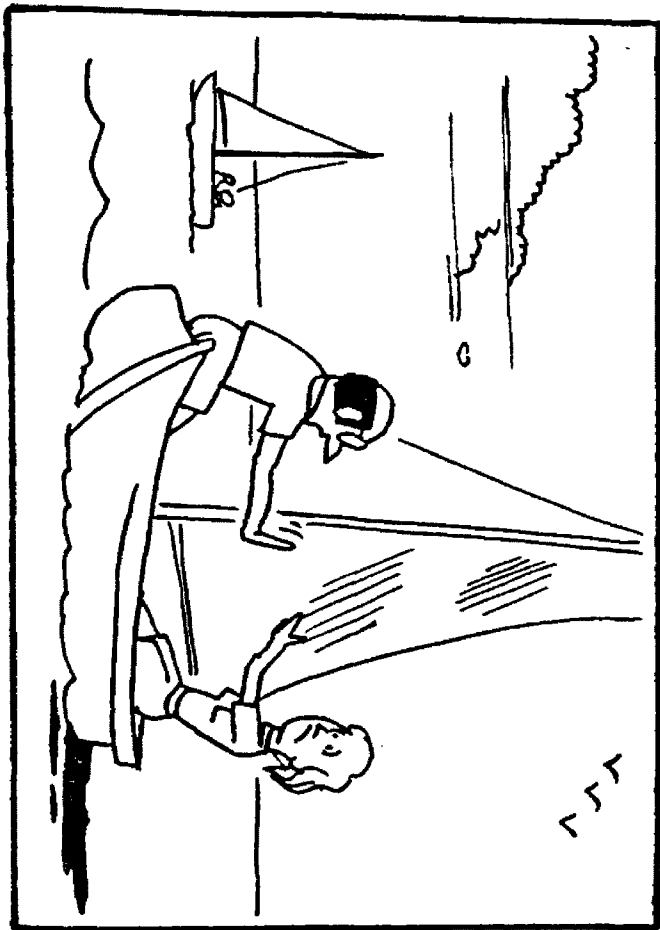


Plate 16

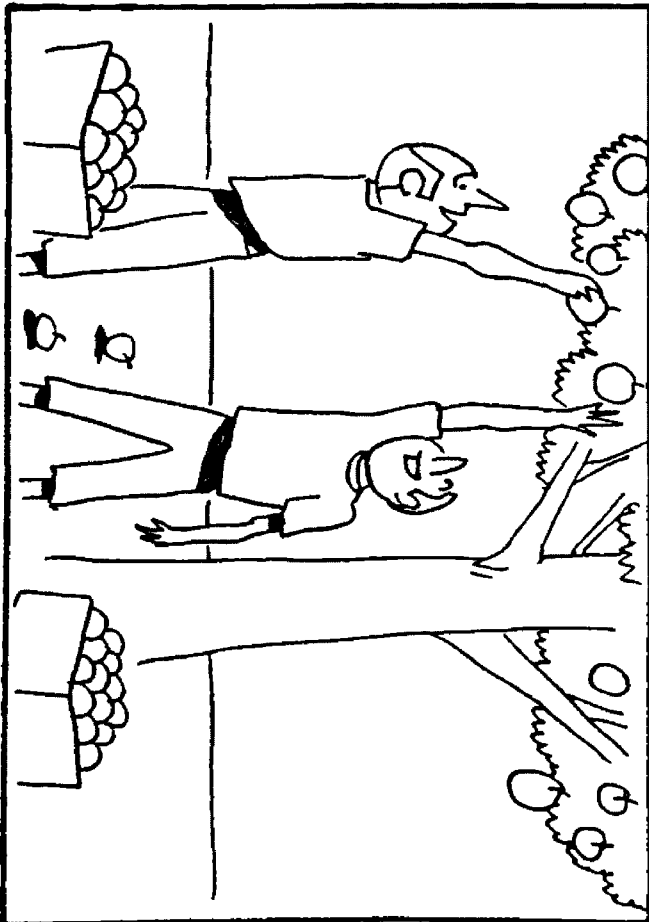
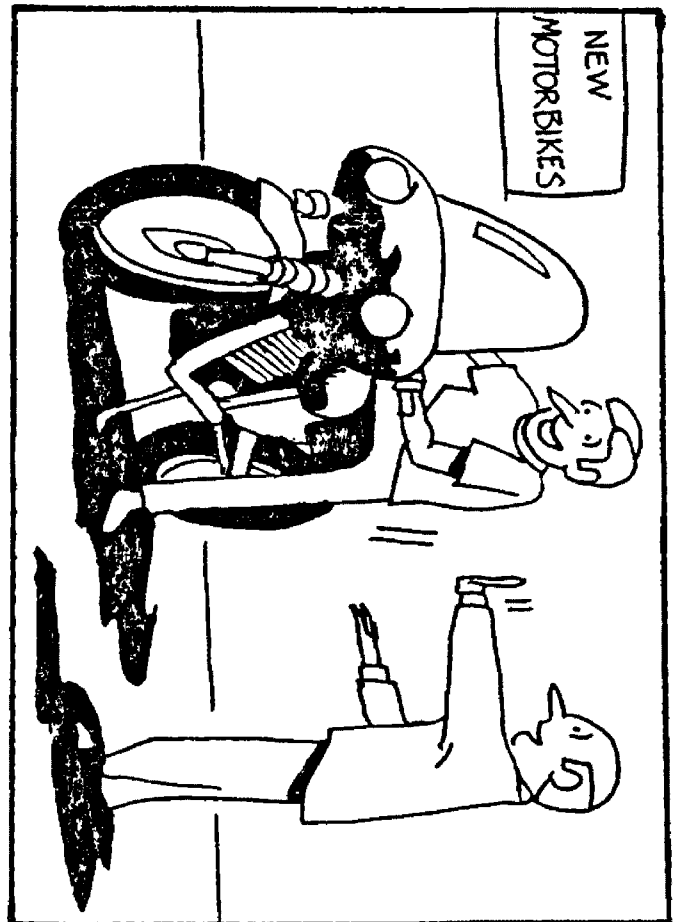
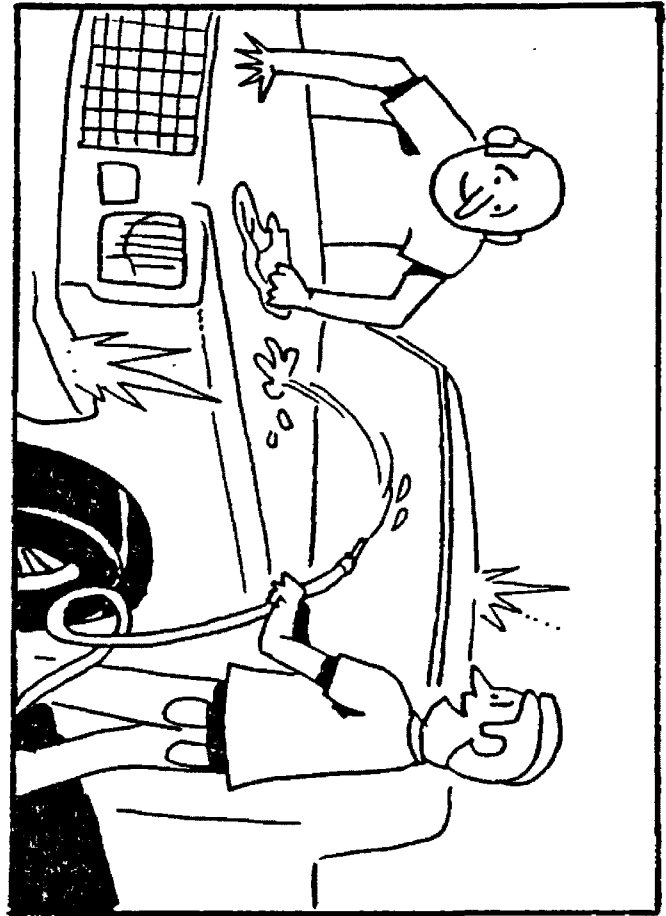


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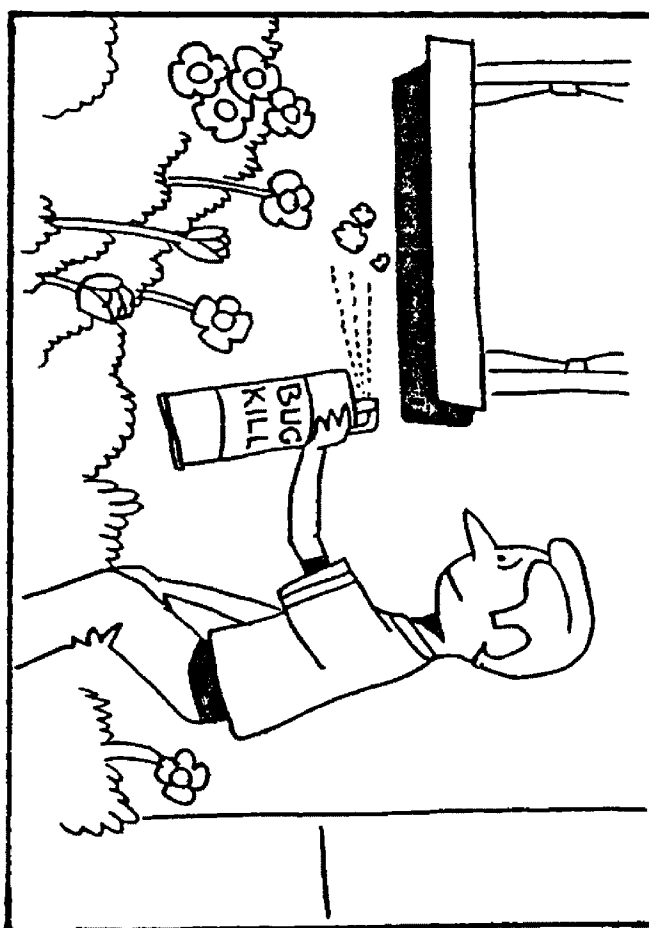
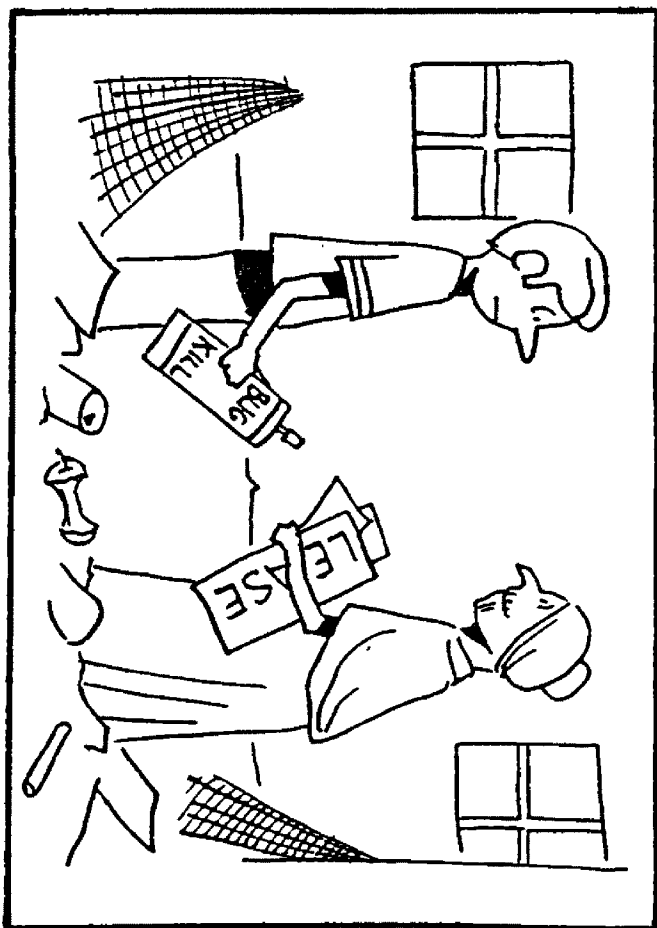
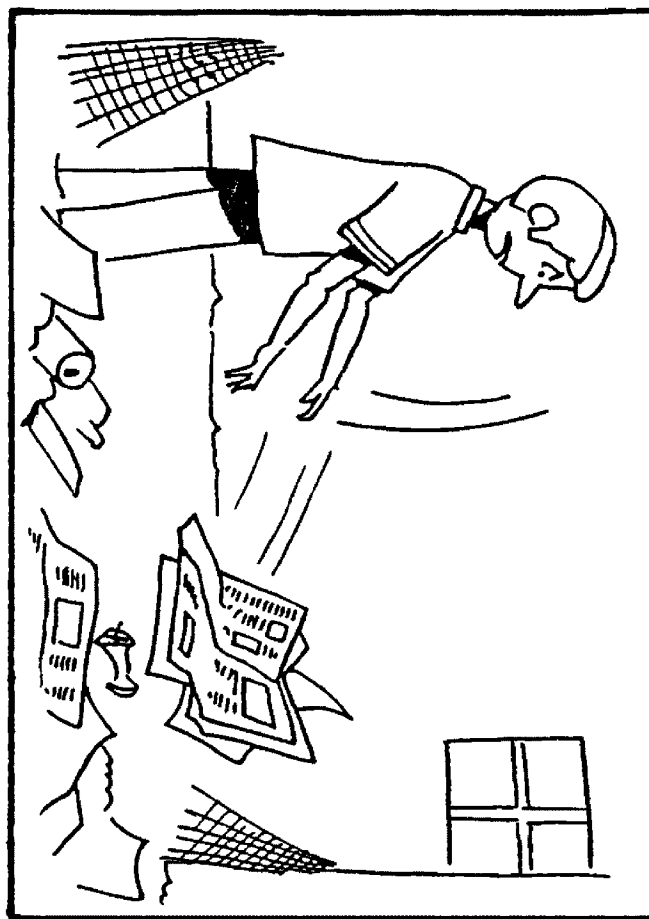
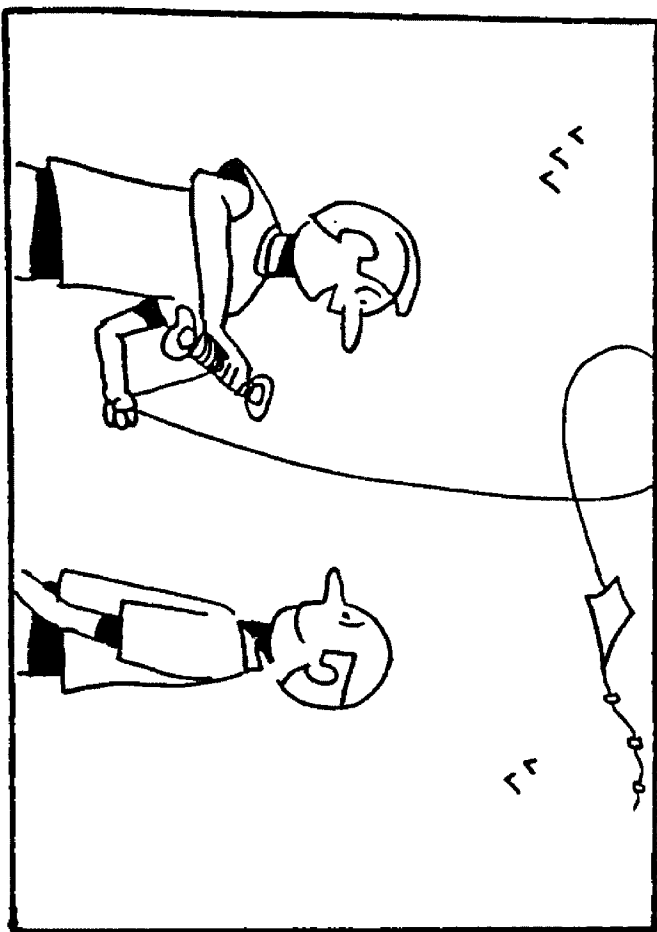


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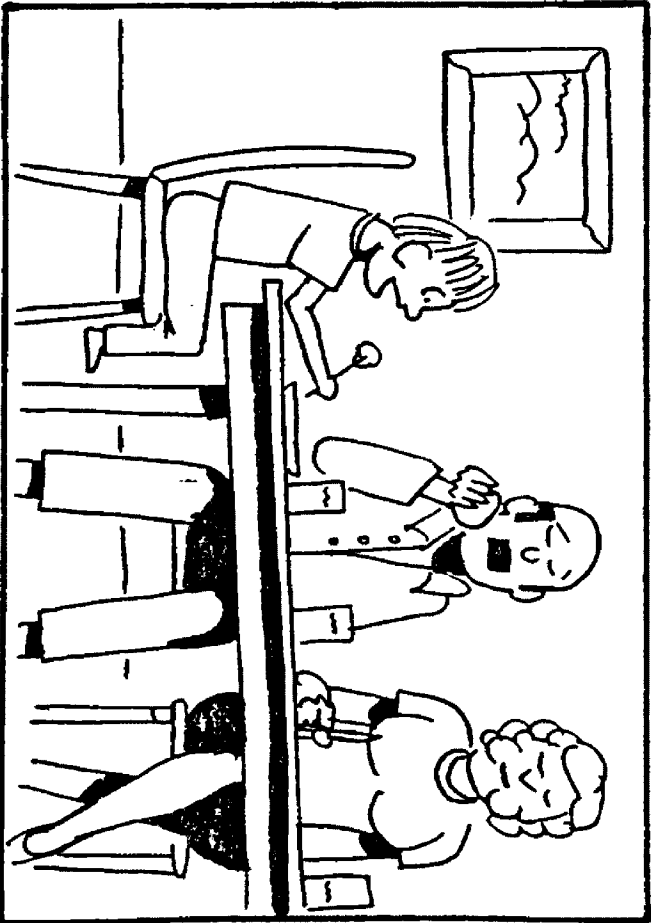
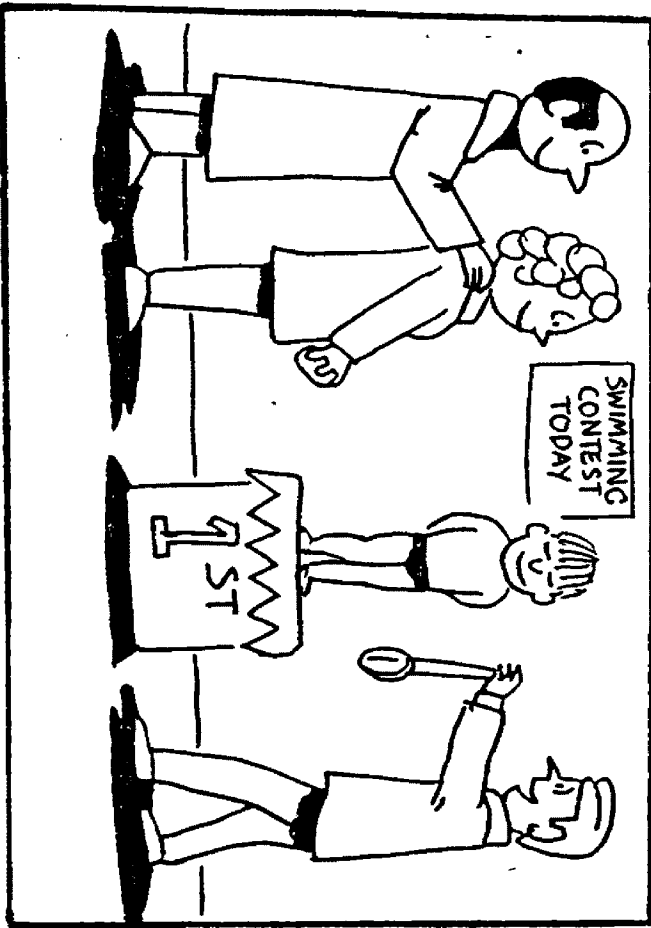
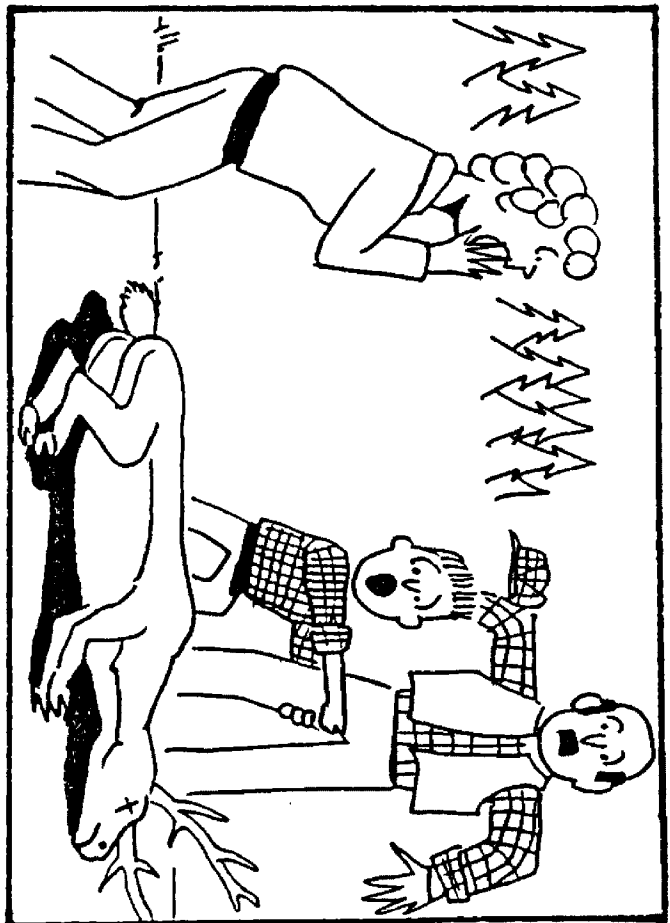
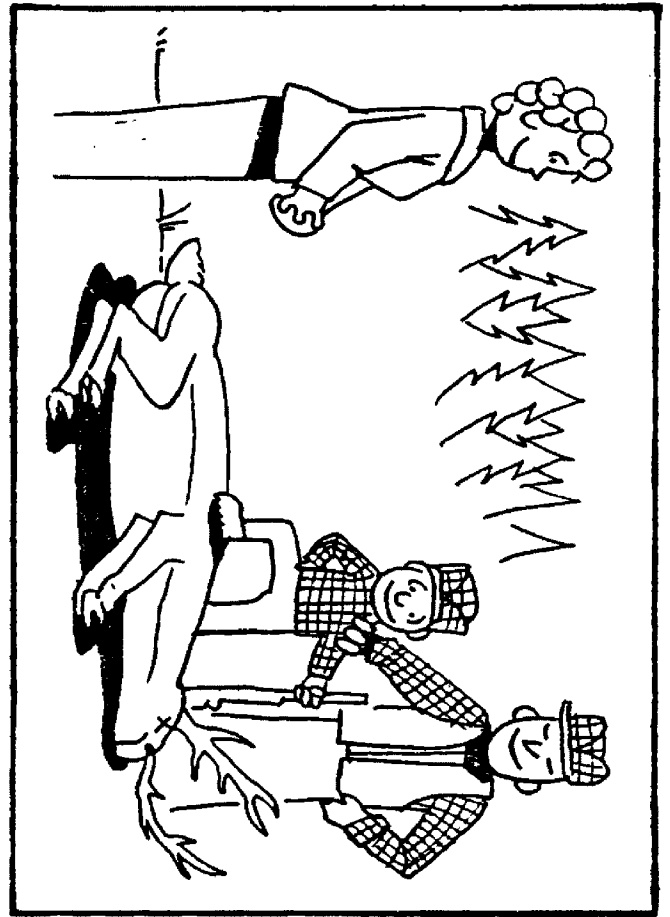


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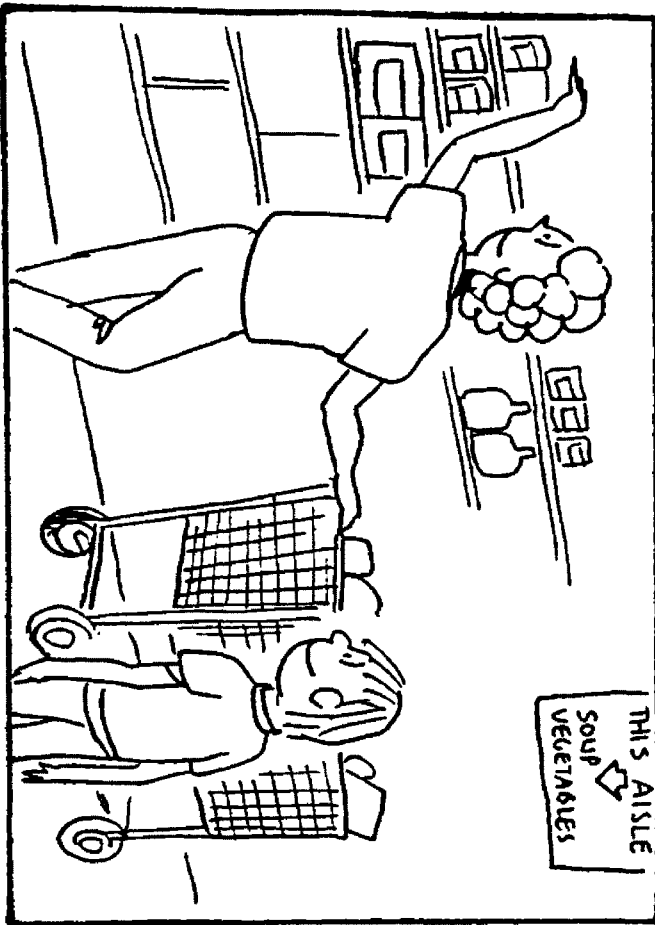
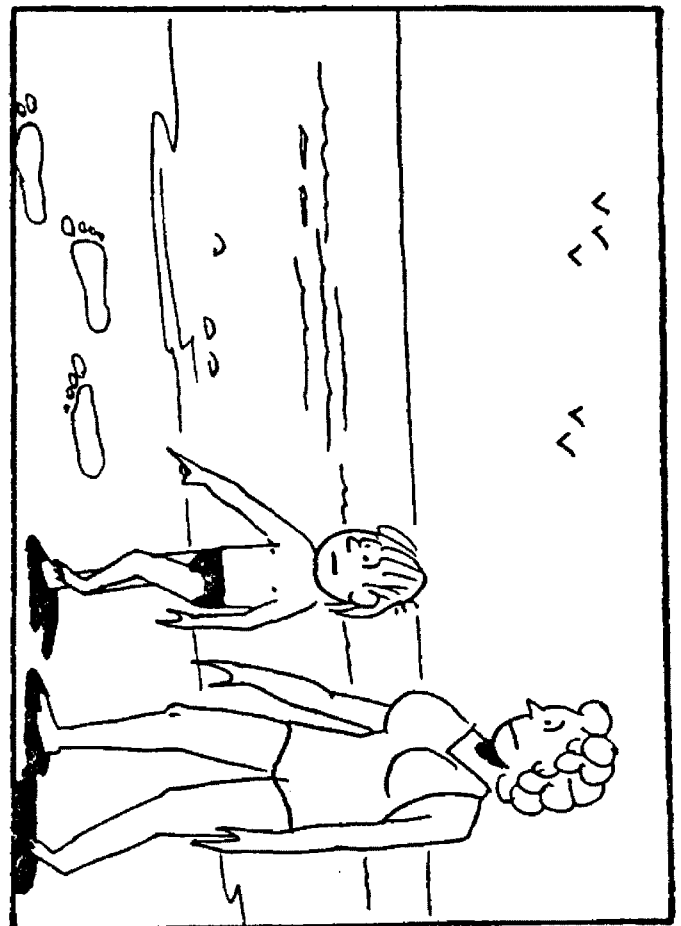
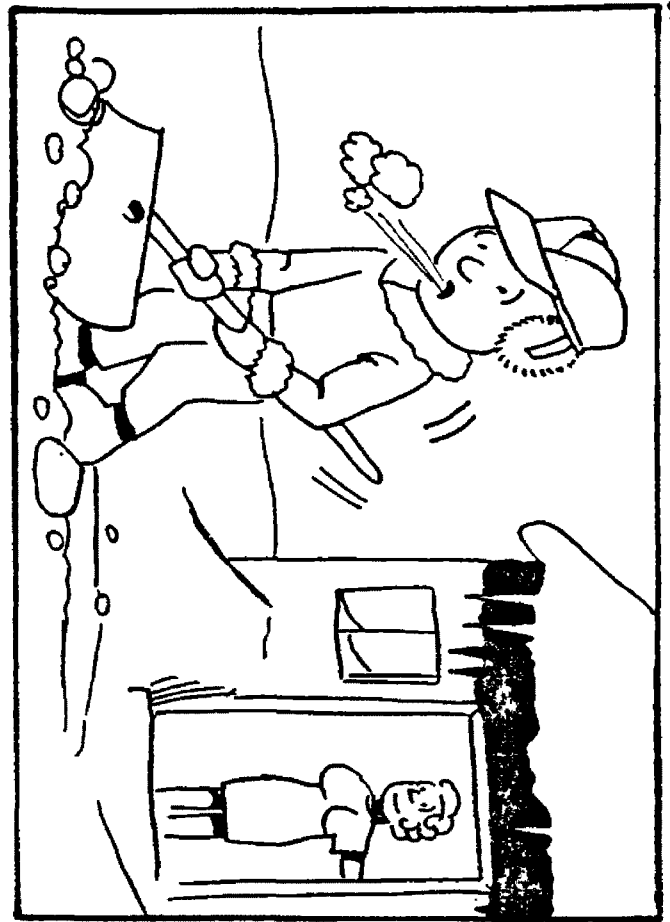


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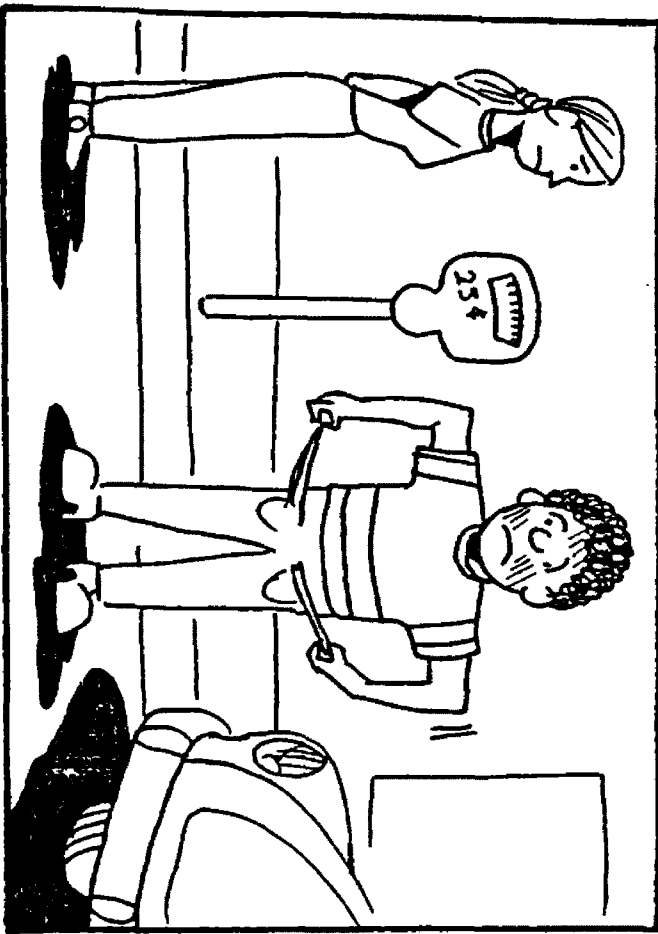
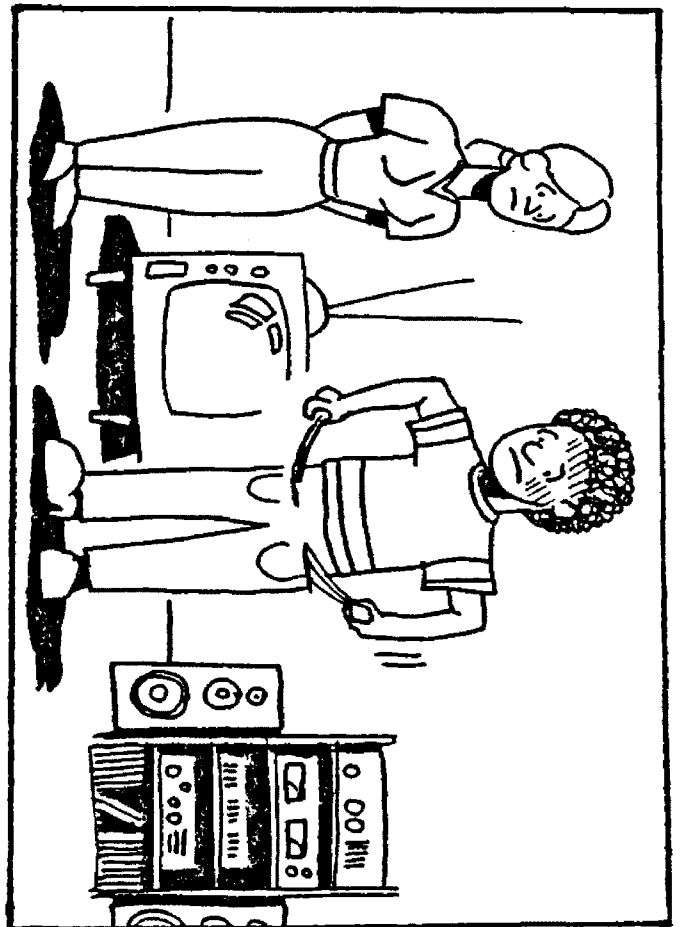
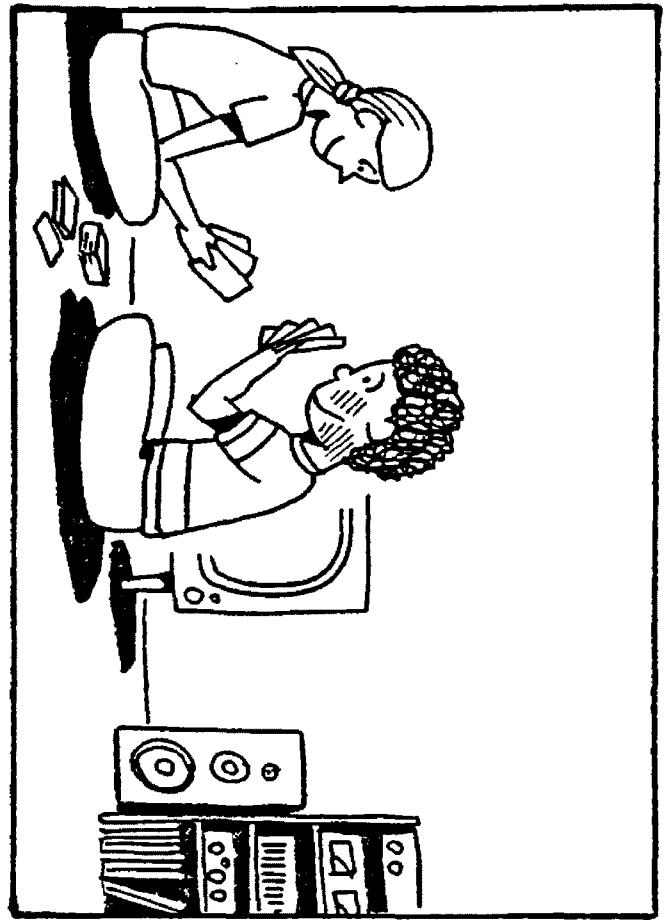


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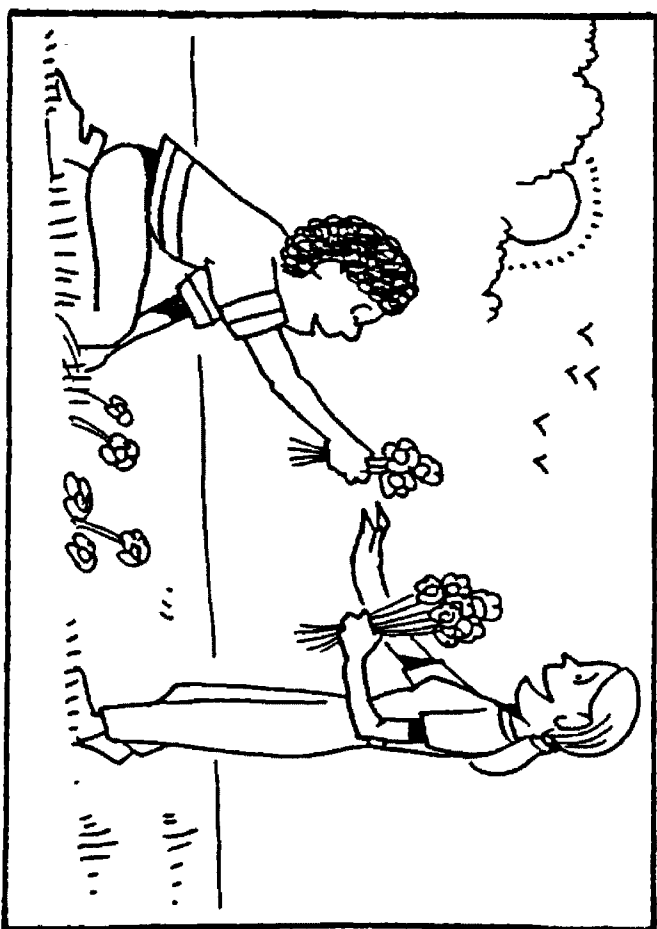
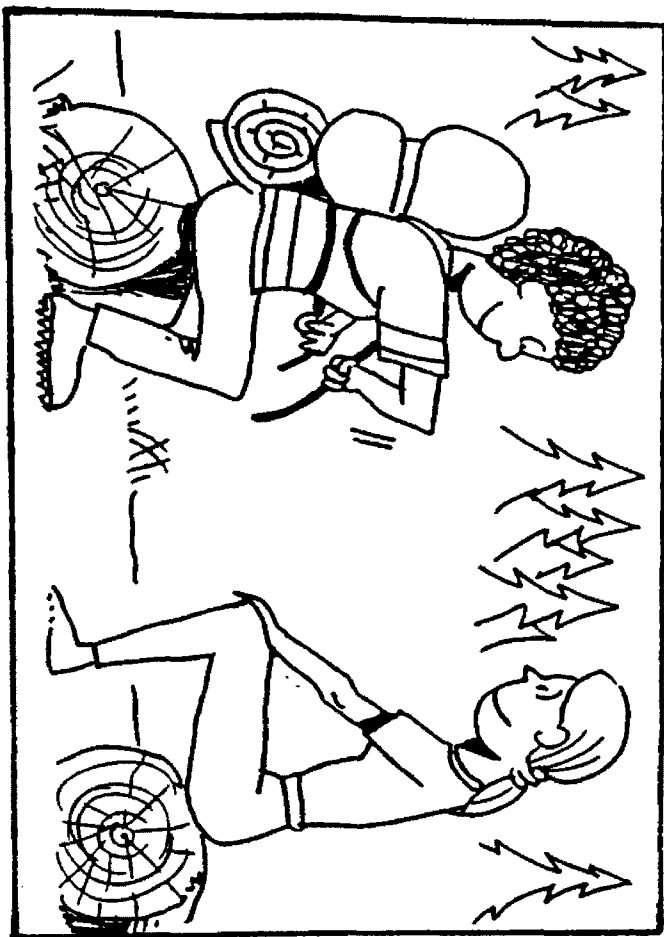
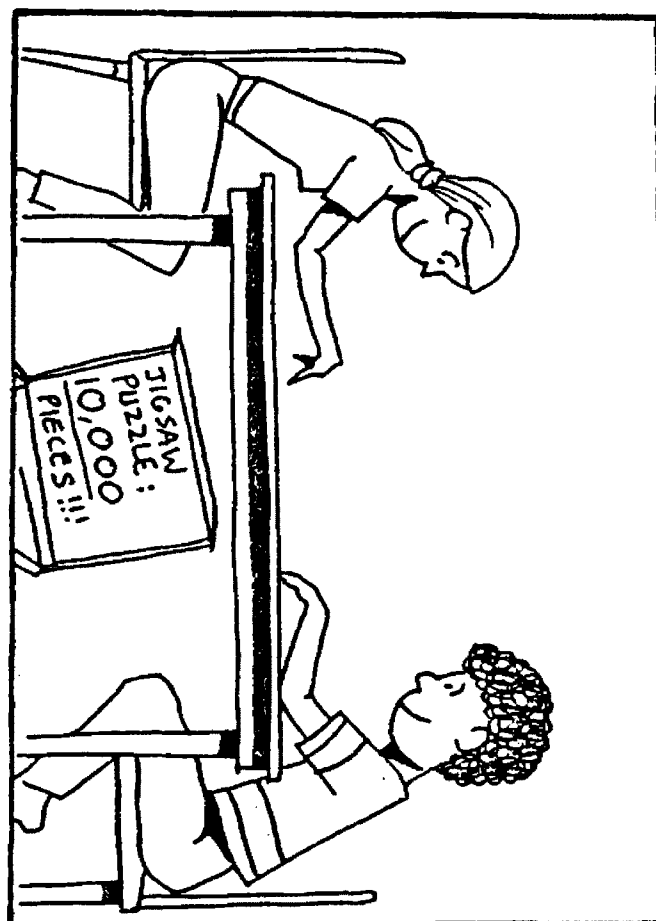
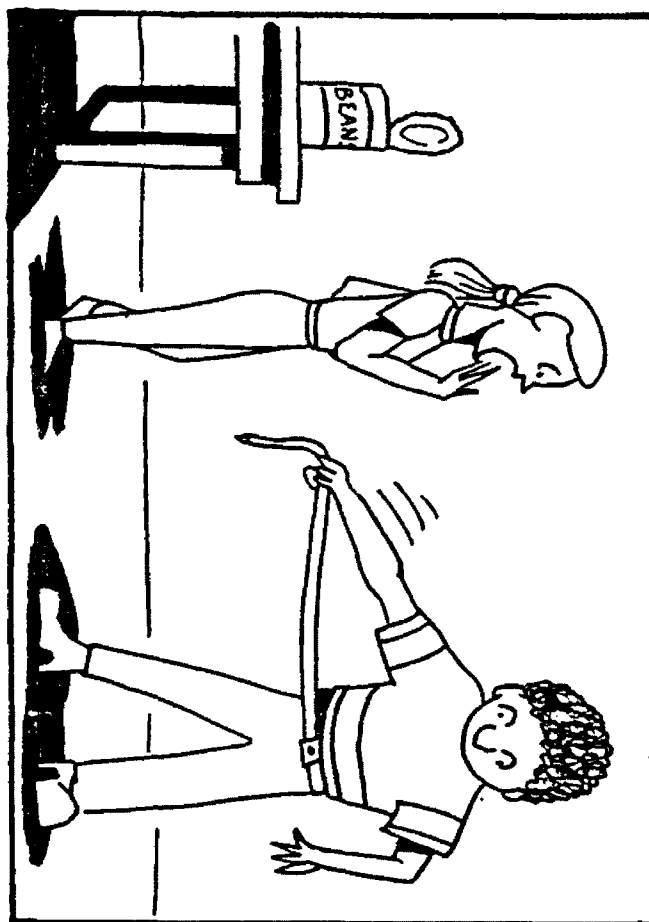


Plate 22

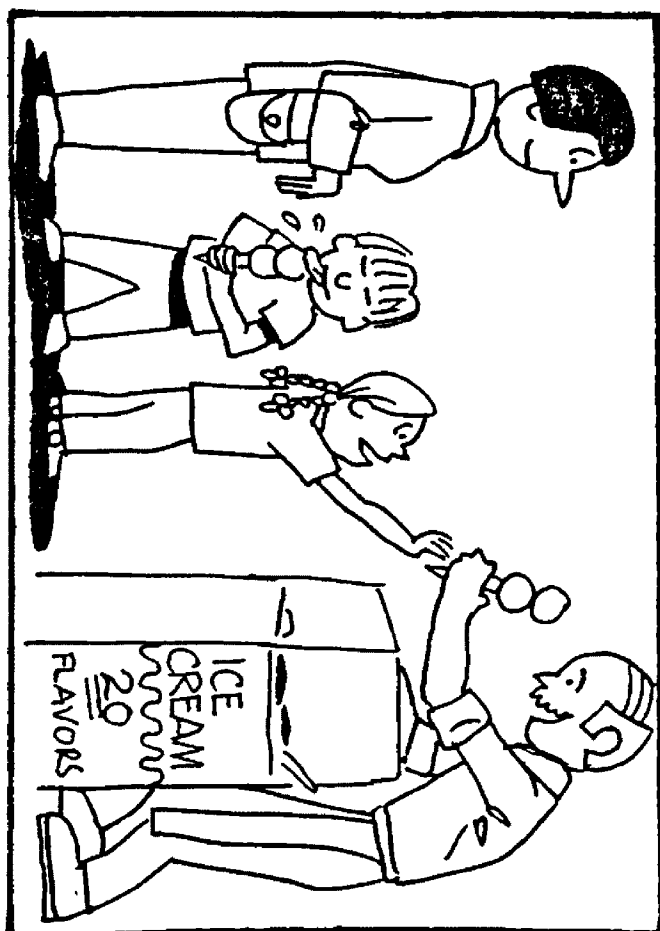
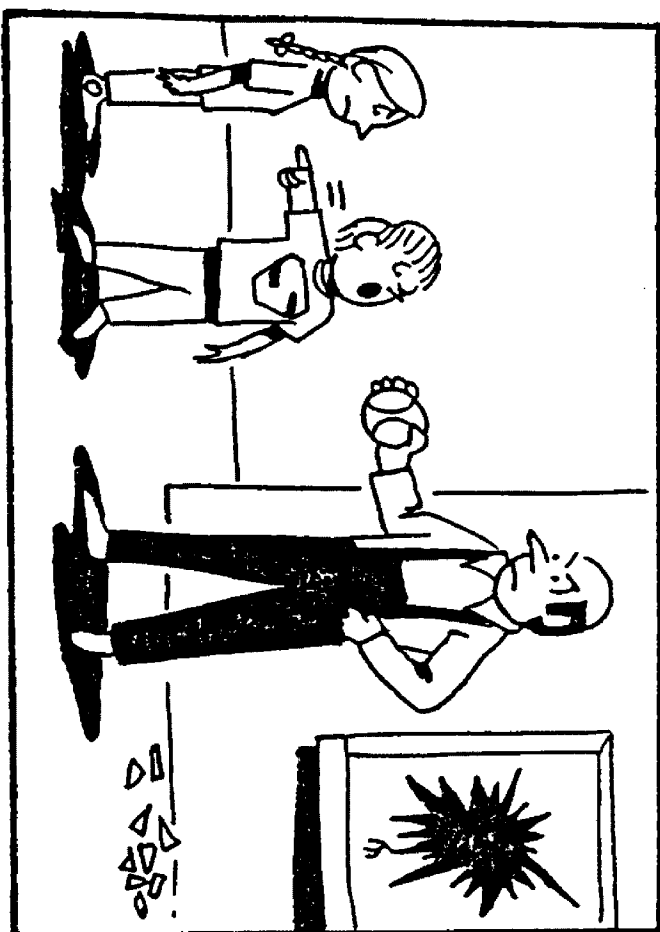
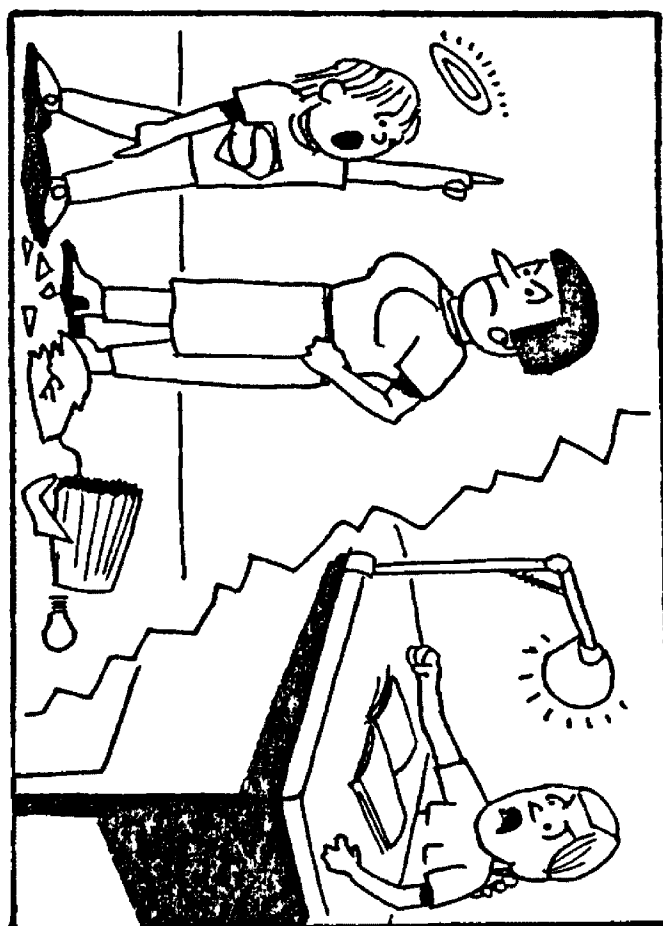
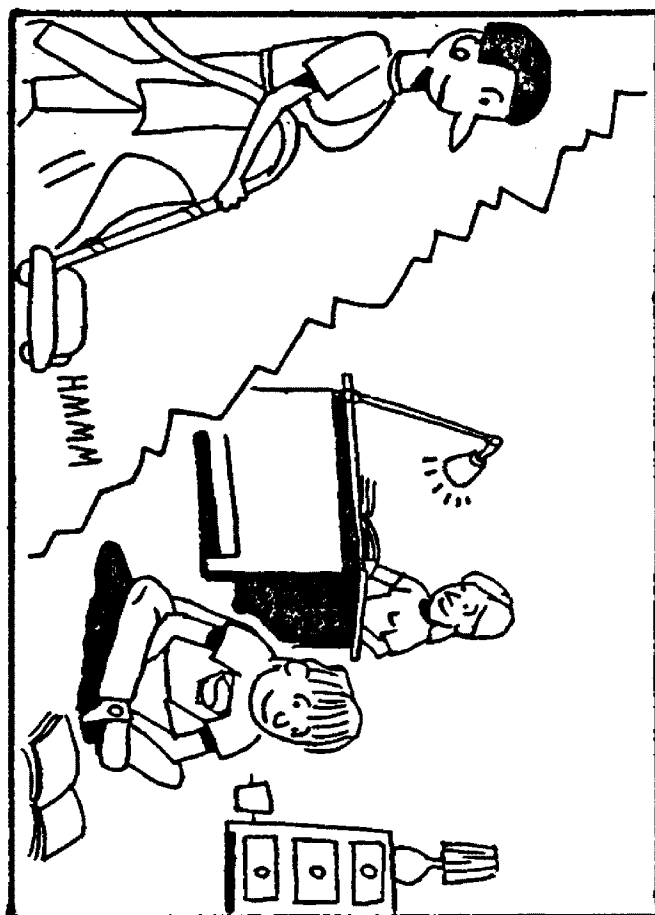


Plate 23

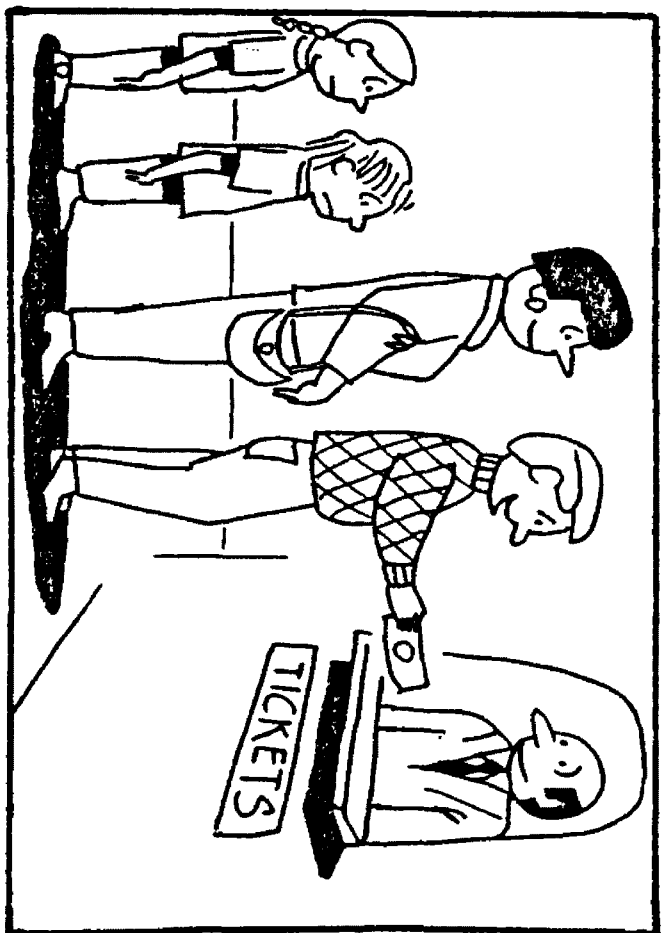
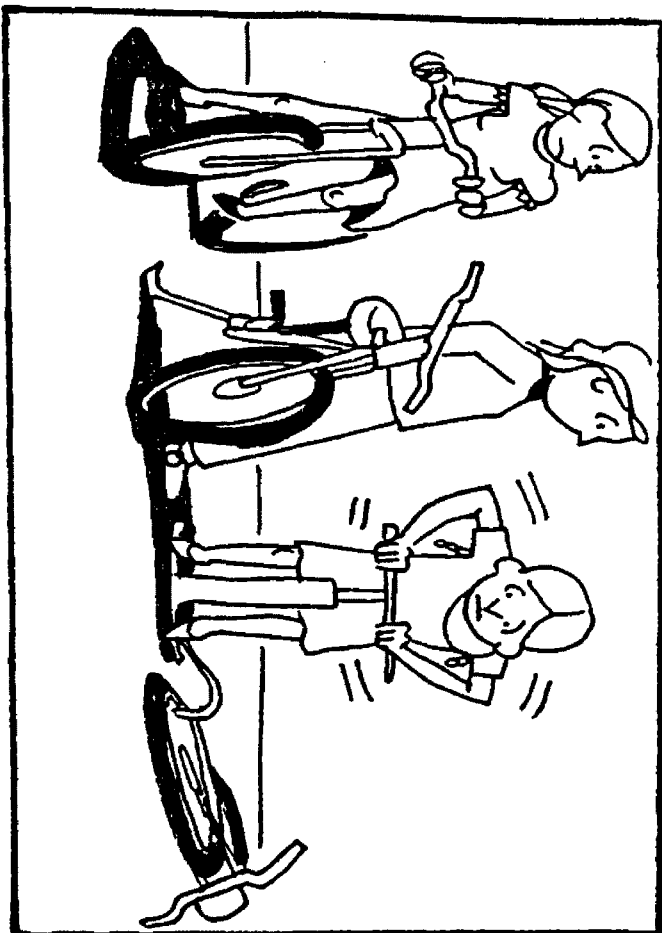
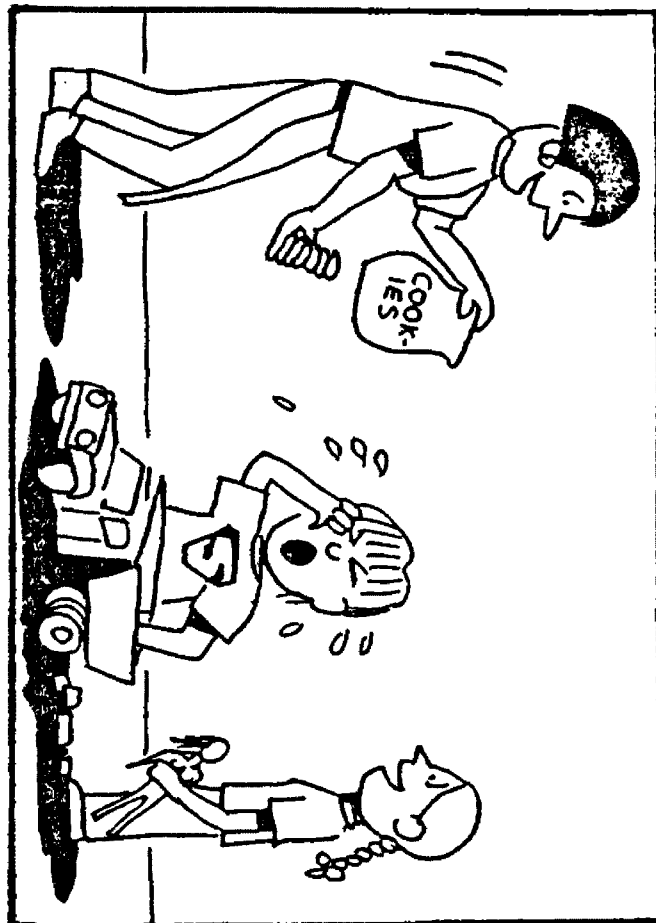
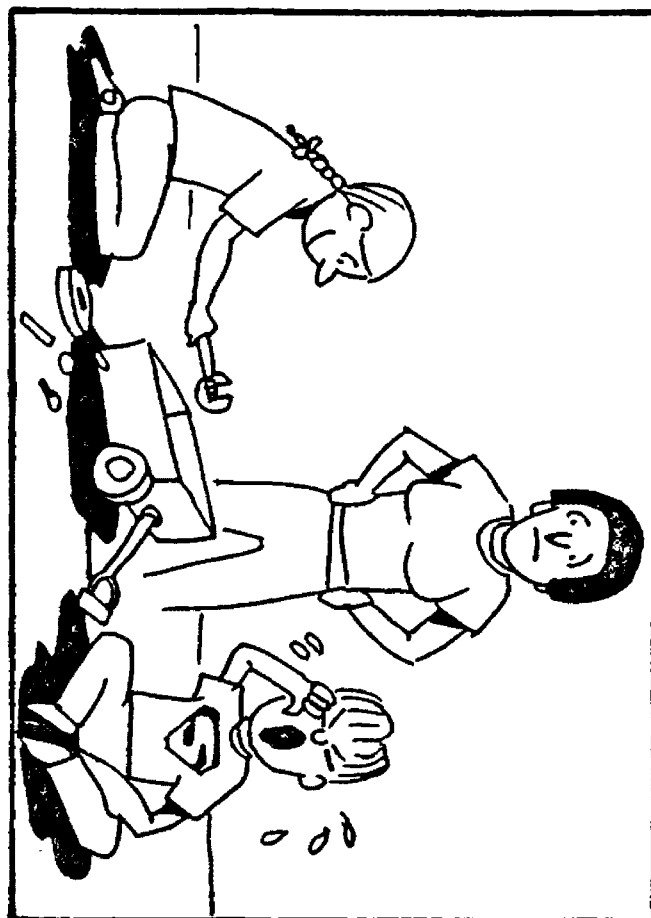


Plate 24

Appendix C

Instructions to Subjects for the Experimental Task.

"Today we're going to listen to some short stories and look at some pages with pictures on them. I will read you one story at a time, and you're to listen very carefully to the story as I read it to you. When I'm finished with the story, look carefully at all the pictures on the page in front of you, and point to the one picture (emphasized) which goes best (emphasized) with the story you just heard. Do you understand what to do? Good. The first two stories we do are just for practice, so you can practice listening carefully and then pointing to the one (emphasized) picture that goes best (emphasized) with the story. Are you ready? (First story is read to child.) Good listening. The picture you pointed to is the one which goes best with the story."

If a subject pointed to a foil at this point, the investigator responded with: "Good try. Let's listen to the story again, and see if another picture might go best with the story". The story was read again, then the investigator intervened to point out the salient points of the story in relation to the appropriate picture. After this intervention, the investigator then asked: "Do you see how that picture goes best with the story? Good. Listen to the next story".

If a subject pointed to a foil at this point, the same procedure as outlined above was again performed.

"Now we are going to listen to some more stories. I will not be able to answer any questions or explain any of the stories to you. Remember to

listen carefully and point to the one picture that goes best with the story. Are you ready?"

In the neutral context the subjects were confronted with two pages of pictures, not one page as in the idiomatic and literal contexts. When the first neutral context was encountered, the instructions were supplemented as follows: "With this next story you will have to look at two pages of pictures, not just one page. After I read the story, look carefully at all of the pictures on both pages (hand gesture to direct child's attention across both pages) and point to just the one (emphasis) picture which goes best with the story. Do you understand? Ready" If the subject pointed to one picture on each page, the investigator intervened as follows: "Remember, only point to one picture, not two pictures as you just did. Which one (emphasis) picture do you think goes best with the story?" On the second presentation of the neutral context, each subject was reminded "Remember, just pick one picture".

If a child asked for any feedback other than a simple repetition of the story, s/he was reminded: "I'm sorry, but like I said in the instructions, I'm not allowed to tell you anything else about the stories/pictures. You're working really hard; just keep trying your best".

Descriptive Data

Subject	Age ²	I.Q. ³	Receptive	Expressive	Context ¹		
			Language ⁴	Language ⁵	Literal	Idiom	Neutral ⁶
Normals							
Five-Year Olds							
s1	5;5	110	9.0	10.5	2	1	0/2
s2	5;1	113	9.0	9.5	2	3	1/1
s3	5;2	90	9.0	7.0	4	1	0/3
s4	5;3	104	11.0	8.5	1	2	1/1
s5	5;1	96	8.0	7.5	2	3	0/2
s6	5;1	106	8.5	8.5	4	2	1/2
s7	5;1	104	9.0	9.0	2	2	0/2
s8	5;3	108	11.0	10.0	4	0	0/3
s9	5;1	108	11.0	9.5	1	3	1/1
s10	5;1	110	10.0	9.5	2	2	0/4
Seven Year-Olds							
s11	7;3	97	11.0	10.0	3	3	0/1
s12	7;3	96	9.0	11.5	3	3	0/0
s13	7;5	90	12.0	9.5	4	3	0/3
s14	6;9	108	10.5	11.5	4	2	0/1
s15	7;2	96	8.5	10.5	2	2	0/1
s16	7;2	99	9.5	10.5	1	3	1/1
s17	7;0	93	10.5	9.0	4	2	1/2
s18	6;10	104	11.5	12.5	3	2	1/3
s19	7;0	115	10.0	12.0	3	4	2/2
s20	6;9	100	11.5	11.0	3	3	1/2

Nine Year-Olds

s21	8;10	96	8.0	9.0	3	3	0/2
s22	8;6	98	10.0	9.0	4	4	1/1
s23	8;7	104	8.5	10.5	3	3	0/3
s24	8;11	111	9.0	9.5	3	4	0/4
s25	8;9	115	8.5	11.5	3	4	0/3
s26	8;10	103	9.0	9.5	3	3	0/1
s27	9;2	96	8.0	10.0	3	3	0/3
s28	8;10	99	7.5	10.0	3	3	0/3
s29	8;9	107	11.0	10.5	4	3	1/1
s30	8;9	104	10.0	9.5	4	3	1/3

Eleven Year-Olds

s31	11;5	101	11.0	10.5	4	3	1/1
s32	11;0	96	7.5	11.0	4	3	1/2
s33	10;11	114	9.0	9.5	4	4	0/3
s34	10;11	89	9.5	9.0	4	4	1/2
s35	11;3	106	10.5	11.0	4	4	1/3
s36	11;4	96	9.0	11.5	4	4	0/4
s37	11;2	111	12.0	13.0	4	3	0/4
s38	11;5	87	8.5	8.0	4	4	1/3
s39	10;10	98	11.0	9.5	4	3	1/3
s40	11;2	86	9.0	9.5	4	3	2/2

Fourteen Year-Olds

s41	13;11	94	10.5	9.0	4	4	1/3
s42	13;9	107	11.0	12.5	4	3	0/4
s43	14;2	112	9.5	8.5	4	4	2/2

s44	14;0	92	7.5	7.0	4	3	2/2
s45	13;8	101	8.0	10.5	4	3	2/2
s46	13;11	113	10.0	12.5	4	4	1/2
s47	14;2	98	11.5	8.0	4	4	1/2
s48	14;4	104	12.0	8.5	4	3	0/2
s48	14;1	97	10.5	10.0	4	4	2/2
s50	13;10	103	9.0	9.5	4	4	0/4

Language-learning deficient

Seven Year-Olds

s51	7;5	94	6.5	5.0	3	3	0/2
s52	7;3	86	6.0	4.5	0	2	0/3
s53	6;10	101	5.0	4.0	2	2	0/1
s54	7;1	92	5.5	5.0	1	2	1/0
s55	6;9	98	6.5	4.5	4	4	1/1
s56	7;3	103	6.0	4.0	1	1	0/1
s57	7;0	87	5.0	4.5	3	1	0/1
s58	6;10	85	4.5	3.5	2	1	0/1
s59	7;2	91	5.5	4.0	3	0	0/2
s60	7;5	100	6.0	5.0	2	2	0/0

Nine-Year Olds

s61	9;1	97	5.5	4.5	4	2	1/1
s62	8;10	92	6.0	3.5	1	4	0/3
s63	9;4	106	6.0	4.0	3	0	0/1
s64	9;1	89	4.5	5.0	3	2	1/1
s65	8;9	102	5.0	4.5	3	3	1/2
s66	9;3	93	4.0	3.0	3	2	0/1

s67	9;4	90	5.5	4.0	3	3	0/2
s68	8;11	87	6.5	5.5	3	1	0/2
s69	8;9	96	6.0	6.0	1	3	1/1
s70	9;2	94	5.0	4.5	4	2	1/2

Eleven Year-Olds

s71	11;4	104	5.0	4.5	4	3	0/3
s72	11;1	95	6.5	5.0	3	3	0/2
s73	10;10	88	6.0	4.0	3	3	0/1
s74	10;8	101	6.5	3.5	3	3	2/2
s75	11;5	89	5.5	5.0	4	3	0/3
s76	10;11	93	5.5	4.0	3	3	1/2
s77	11;0	108	6.5	3.0	4	4	0/1
s78	10;11	91	6.0	4.5	4	2	0/3
s79	11;2	85	5.5	5.0	4	2	0/3
s80	11;3	94	5.5	4.0	4	3	0/3

Fourteen Year-Olds

s81	14;5	89	6.5	4.5	4	2	0/3
s82	14;3	102	5.0	5.0	3	4	1/1
s83	14;0	91	6.0	4.0	4	3	1/3
s84	14;2	99	6.0	4.5	4	4	0/4
s85	14;4	87	5.5	3.5	4	4	0/2

¹100% correct = 4, for each context

²Years; months

³Performance subscale

⁴Averaged standard scores

⁵Averaged standard scores

⁶First number = idiomatic variant correct choice; second number = literal variant choice

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